

An empirical study of the international Fisher effect

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Abstract

The international Fisher effect is identified as part of the four-way equivalence model. This model outlines a relationship between exchange rates, interest rates and inflation rates. The international Fisher effect, specifically, states that the difference in interest rates between two countries is an indicator of the expected change in exchange rates of their currencies.

The aim of this paper is to test the validity of the international Fisher effect between South Africa and the UK. The understanding of the exchange rate movements is vital for management decisions, investment activity and policy making for central banks and government.

Data has been collected for a sampling period beginning in July 1995 and ending in April 2001. Interest rates in the UK and South Africa are recorded for this period. A record of exchange rate movements for the same period has also been compiled. Using this data, a simulation of an uncovered interest arbitrage was carried out. This was done by taking £100 from the UK, converting it to Rands and investing those Rands in a South African bank. At the same time, £100 was also invested in a UK bank. As interest accrued over the test period, interest rates in both countries changed, exchange rates fluctuated and the balance in the South African account was compared to the balance in the UK account. According to the model, the real balances in both the accounts should remain equivalent over the sampling period.

It was found that interest rates in SA were higher, more volatile and less cyclic than those in the UK. As predicted by the model, the exchange rate (in R/£) constantly increased over the sampling period. Reasons for the higher interest rates in SA include a low national savings rate, high inflation, the South African economies vulnerability to events in the international market and the reserve bank's monetary policies.

The simulated arbitrage was found to be profitless and the balances of the two simulated investment accounts were found to be statistically similar. There were, however, some short term deviations from the theory. The value of the SA account was lowest during times of high interest rates in SA, when there was volatility in the forex market and when the exchange rate was at peaks in the cycle. Nevertheless, the exchange rate - interest rate relationship always returned to equilibrium.

The risk and unpredictability associated with the international market is high while only small chances exist to achieve economic gain from borrowing from low interest rate environments (or investing in countries where the interest rates are high). It was concluded that the international Fisher effect, between the UK and South Africa, for the period studied, had significant short term deviations but is valid over the medium term.

The implication for business practice is that stakeholders should be conservative when faced with risk associated with foreign exchange exposure unless, as is the case with speculators, it is their core competence to predict macroeconomic trends and profit from beating the market.

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1. Introduction

The aim of this dissertation is to test the validity of the international Fisher effect between South Africa and the UK.

The four-way equivalence model, incorporating the Fisher effect, the international Fisher effect, the interest rate parity theorem, the purchasing power parity theorem and expectations theory, states that equilibrium exists and proposes a set of relationships between exchange rates, inflation rates and interest rates. The international Fisher effect proposes a relationship between interest rates and exchange rates.

It is necessary to understand whether or not the Fisher effect holds because it influences the decision making of multinational organisations' managers. Managers of international businesses, multinational companies, global organisations and even SMME's are constantly faced with the opportunity to source funds from foreign banks in foreign countries in foreign currency for local investment in plant, equipment, property, projects or business ventures. Furthermore, with decreasing trade barriers, the trend toward more relaxed exchange controls and globalisation of business, there are an ever increasing number of opportunities to benefit from developing a global portfolio. The risk associated with exploiting these increasing international opportunities is of course the resulting foreign exchange exposure.

Understanding the relationship between exchange rates, interest rates and other macroeconomic variables such as inflation rates, is critical to legislative, monetary and fiscal action by governments and central banks. The actions of investors, arbitrageurs, speculators and other stakeholders in the international money markets are also influenced by the existence and validity of models and theories that explain and predict changes in macroeconomic variables.

Chapter 2 begins with an explanation of the four-way equivalence model and focuses on the international Fisher effect. The relationship between the validity of the international Fisher effect and the outcomes of investment decision making is illustrated. A review of existing knowledge follows. The contemporary views and the results obtained by current research into the validity of certain models including the Fisher effect and the associated international Fisher effect are discussed.

The research design used to test the international Fisher effect is described and explained in Chapter 3. The data required is identified and the data collection process is outlined. The statistical tests to be used on the data are chosen and described.

A summary of results, which describes the trends, is presented in Chapter 4 and is the foundation for discussion. Detailed versions of the results are presented in Appendices i to viii. The spreadsheet containing all the calculations and statistical tests is included in appendix vii.

Chapter 5 begins with a look at the interest rate movements in South Africa and the UK over the sampling period. The rates are compared and the factors that have affected the movement of these interest rates are explored and discussed.

The exchange rate between the Rand and the Pound is then discussed and chartism is used to provide a brief overview of the sampling period. Qualitative observations are made and reasons for exchange rate movements are analysed.

The discussion in Chapter 5 closes with a look at the quantitative measurement of the extent to which the international Fisher effect has worked. This is done using the simulation results and statistical tests that are described in the research design chapter.

Conclusions are drawn in chapter 6. The validity of the international Fisher effect is assessed, the implications on business practices are identified and suggestions for further study are made.

2. Literature review

In this chapter the four-way equivalence model is described and each part of the model is explained. Research regarding the validity of the model is discussed and, using existing knowledge, the validity of the Fisher effect and the international Fisher effect is assessed.

2.1. The four-way equivalence model

According to Buckley (2000) the four-way equivalence model proposes a set of relationships between certain macroeconomic variables. This model is made up of five theories: the Fisher effect, the interest rate parity theorem, the purchasing power parity theorem, expectations theory and the international Fisher effect. Each of these theories is described below.

2.1.1. Expectations theory

Expectations theory states that the difference between the spot exchange rate and forward exchange rate equals the expected change in spot rate:

$$(F_0 - S_0) / S_0 = (S_t - S_0) / S_0$$

where

F_0	=	forward rate
S_0	=	spot rate
S_t	=	expected spot rate

Therefore, expectations theory suggests that the forward exchange rate is an indicator of the future spot rate.

2.1.2. The interest rate parity theorem

The interest rate parity theorem states that the difference between spot and forward rates must equal the difference in interest rates:

$$(F_o - S_o) / S_o = (IR - I_{\pounds}) / (1 + I_{\pounds})$$

where IR = Interest rate in SA
 I_{\pounds} = interest rate in UK

2.1.3. The Fisher effect

The Fisher effect states that the difference in interest rates would equal the difference in inflation rates:

$$(IR - I_{\pounds}) / (1 + I_{\pounds}) = (PR - P_{\pounds}) / (1 + P_{\pounds})$$

where PR = SA inflation rate
 P_{\pounds} = UK inflation rate

2.1.4. The purchasing power parity theorem

The purchasing power parity theorem states that the difference in inflation rates equals the expected change in spot rates:

$$(PR - P_{\pounds}) / (1 + P_{\pounds}) = (S_t - S_o) / S_o$$

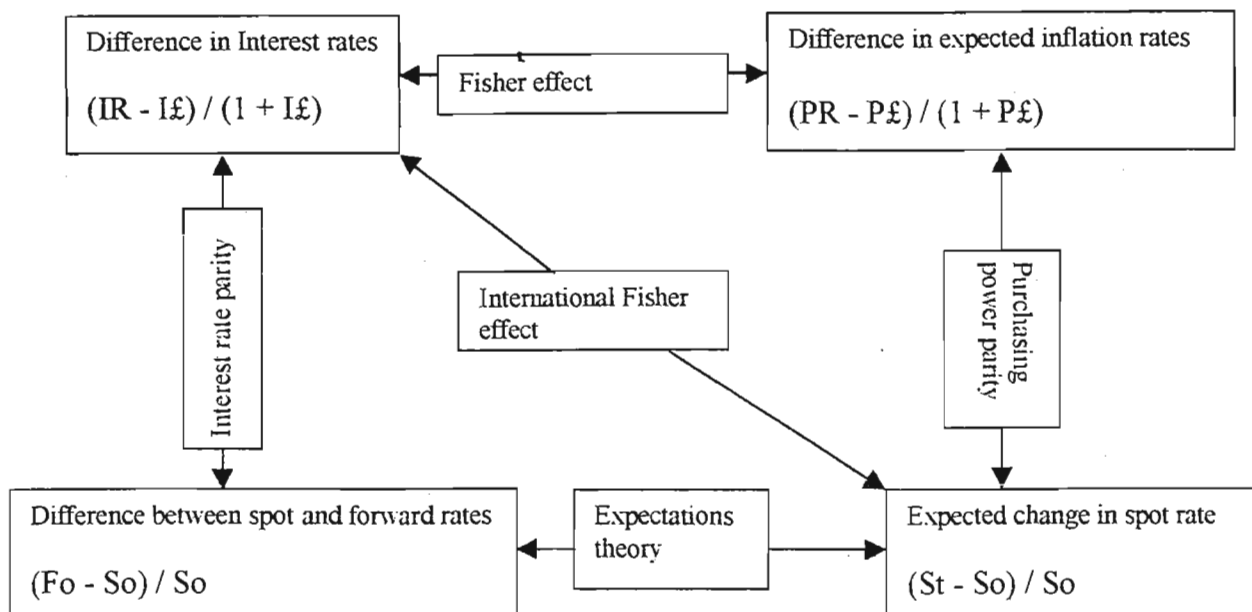
2.1.5. The international Fisher effect

The international Fisher effect states that the difference in interest rates equals the expected change in spot rates:

$$(IR - I_{\text{£}}) / (1 + I_{\text{£}}) = (St - So) / So$$

Figure 1, below, illustrates these theories and shows their inter-relationship.

Figure 1, The four-way equivalence model



The relationship between inflation rates and exchange rates is based on the law of one price since arbitrage ensures that the price of a commodity in two centres is the same. Strictly speaking, the purchasing power parity theorem should only apply to internationally traded goods that are freely movable at no cost. However, the model uses relative general price changes (inflation) as a proxy for prices of these goods. Another imperfection in this model arises from the fact that the prices of goods do not change with the same frequency as exchange rates and that the prices of certain goods are less elastic

than others. Price controls, marketing effects, cross subsidisation and consumer tolerance ceilings also affect prices and further distort this model.

The purchasing power parity theorem is therefore an approximation, which suggests that the exchange rates change to compensate for differences in inflation rates between countries.

NB. According to the American economist, Irving Fisher after whom the Fisher effect and the international Fisher effect were named "nominal interest rates in a country reflect the real returns for local inflation expectations." This is the basis for the argument that the expected change in prices should be equal to the prevailing interest rates or translated into the Fisher effect as described in the four way equivalence model. It must be noted that constraints, restrictions and costs of international mobility of goods, labour and capital create imperfections in the equilibrium described by this model. Some of these imperfections result from exchange control, legislation that restricts capital flow, lack of currency convertibility, social factors and the existence of different tax regimes.

The equilibrium suggested by expectations theory is sometimes broken by participants in the foreign exchange markets who are concerned about risk and predictability as opposed to making the most optimal transaction. Such traders may be banks or institutions who represent importers, exporters and multinational companies for whom it is more important to have stable and predictable cash flow and capital flow predictions than it is to maximise the profitability of their foreign exchange transactions. For these parties, potential profit and loss in the forex market is not related to their core business of trading goods and or services. Thus, forward trading is done at prices lower or higher than the expected rate in order to eliminate the risk of foreign exchange exposure. Hence, the forward price for a particular currency can often be different from the expected spot price.

The relationship between interest rates and exchange rates as suggested by the interest rate parity theorem and the international Fisher effect is argued to hold by the rationale that the market would be constantly driven toward equilibrium by traders engaged in covered (and uncovered) interest arbitrage. If this were not true then there would be an opportunity to make a riskless profit by means of a covered interest arbitrage.

A covered interest arbitrage is a set of transactions where currency is borrowed in one centre, converted to another currency, then invested in the other centre and the proceeds are sold forward. If the equilibrium did not hold then the proceeds could yield in excess of the initial amount borrowed plus the interest accrued and would result in a virtually riskless profit!

Even if equilibrium did not hold, it is argued that swift action by astute arbitrageurs, using computer generated transaction triggers on state of the art technology platforms, would almost instantly squeeze shut even the smallest window.

An uncovered interest arbitrage can yield a risky profit if equilibrium does not hold and yield a zero net result if the model holds. The model that is designed to test the international Fisher effect, as described later in chapter 3, is actually the simulation of an uncovered interest arbitrage.

It is worth noting another simplification to this model. In the discussion a single exchange rate is considered whereas in reality there would be a bid-ask spread that would dictate the difference between buy and sell prices for currency.

2.2. The validity of the four-way equivalence model

The value of a model that can successfully predict the movements of macroeconomic variables cannot be underestimated. Much research has been carried out to determine what makes foreign exchange rates move and how these movements can be predicted. The search for a regression equation is the Holy Grail of forex market speculation.

According to Meese (1990), "Economists do not yet understand the determination of short to medium run movements in exchange rates. Neither models of exchange rates based on macroeconomic fundamentals nor the forecasts of market participants ... can explain exchange rate movement better than a naïve alternative such as the random walk model"

He goes on to say that, "Worse yet, exchange rates are hard to explain after the fact, even with the knowledge of actual fundamental variables. It remains an enigma why the current exchange rate regime has engendered a time series database where macroeconomic variables and exchange rates appear to be independent of one another."

Frankel and Froot (1990) state that, "It is now widely accepted that standard observable macroeconomic variables are not capable of explaining, much less predicting ex ante, the majority of short term changes in the exchange rate."

2.3. The validity of the Fisher effect and the international Fisher effect

From research based on American data, Fama (1975) found that the Fisher effect held for the period 1953 to 1971. Moazzani had the same results for the period 1953 to 1985. The results of these studies agree with findings by Gibson (1970, 1972) and Fama and Schwert (1977).

However according to Buckley (2000) "the majority of work on the fisher effect does not point in this direction". Buckley quotes research by Mishkin (1984), Friedman and Schwartz (1982), von Furstenberg (1983), Geske and Roll (1983), Cumby and Obstfeld (1984) and Cumby and Mishkin (1984) all of which reject the Fisher effect.

NB

The international Fisher effect has been found to hold, in the long term, by Aliber and Stickney's (1975) study of seven industrialised countries (Belgium, Canada, France, West Germany, Netherlands, Switzerland and the United Kingdom) and six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Venezuela) for the period 1966 to 1971. Oxelheim (1985) confirmed this finding.

An interesting study was carried out by Robinson and Warburton (1980) who studied the period 1972 to 1979 and devised four filter rules for placing and switching money in three month treasury bills or three month Eurocurrency deposits. The four filter rules are:

1. Invest for the highest nominal rate of interest
2. Invest in the highest real rate of interest with inflation expectations based on CPI over the last six months
3. Invest in the highest real rate of interest with inflation expectations based on wholesale prices over the preceding six months.
4. Invest in the highest real rate of interest with a "correction" factor built in to allow for exchange rates being out of equilibrium.

Their filter rules seemed to yield substantial excess returns. Bell and Kettell (1983) replicated the Robinson and Warburton study for a further two years and had similar results. MacDonald (1988) warns that the returns could simply reflect higher risk but these studies resulted in a simulated speculative test where a US based speculator borrowed at the lowest available rate and converted and invested in the currency with the highest nominal interest rate. After the speculation period elapsed and the funds were converted back to USD and the loan repaid substantial profits resulted. Seven other major western economies were tested for these filter rules and similarly large profits resulted.

This would seem to suggest that the international Fisher effect does not hold.

The conclusion that can be drawn from existing research is not surprising. There is no model that explains or predicts exchange rate movement reliably. The relationship between macroeconomic indicators is uncertain. Some relationships do hold in the longer term but short term volatility and unpredictability remain.

3. Methodology and data collection

This chapter begins by explaining the concept of a simulation of a particular type of transaction, to test the international Fisher effect. Details such as the sampling frame, choice of parameters and statistical tests are then discussed. Next, the sources and methods of data collection are described. The steps engaged to calculate the simulated investment accounts' balances are explained and finally the calculations used to generate the output of the statistical tests are described.

3.1. Research design and methodology

Recalling, the international Fisher effect states that the difference in interest rates expressed by the “interest agio” $(I(\pounds) - I(R))/(1+I(\pounds))$ is equal to the expected change in spot rates expressed by the “exchange agio”, $(S_t - S_0) / S_0$.

where $I(\pounds)$ = the interest rate in the UK
 $I(R)$ = the interest rate in SA
 S_t = the expected spot exchange rate
 and S_0 = the current spot exchange rate

If this situation were to hold true, it would imply that:

If we borrowed 100 Pounds at time T_0 and converted it into Rands at the prevailing spot rate, and then invested those Rands in a South African bank offering the prevailing, floating prime rate, then, if we at any time in the future, T_e , sold all the Rands in that investment account at the spot rate at T_e for Pounds we should have exactly the same number of Pounds as an investment of 100 Pounds made in a UK bank at T_0 , at the prevailing, floating UK prime rate would have yielded.

To test the international Fisher effect, the value of each of the two investments mentioned in the previous paragraph will be calculated from time T_0 to time T_e , including all the sampling intervals in between, T_n .

3.1.1. The sampling frame

The sampling period was chosen to be from 3 July 1995 to 2 April 2001. This period of approximately six years was chosen to represent the post-apartheid economic era in South Africa. This was done to eliminate the pre-election period which was, from an economic and market risk assessment point of view, a period driven by uncertainty and speculation based on political models, political dynamism and predictions regarding issues such as land reform, redistribution, labour law, nationalisation, privatisation, exchange control, the much discussed subject of the proposed reconstruction and development program and a wide range of other government policies.

Thus, during the pre-election time the exchange rate and foreign exchange markets were driven by factors other than macroeconomic fundamentals that are described in the four-way equivalence model.

The sampling period of six years is also long enough to capture the dynamic and volatile nature of these markets. As can be seen from a preview of the results there was sufficient movement in the interest rates in both countries to provide a meaningful test to the proposed relationship.

3.1.2. The sampling frequency

The sampling frequency was chosen to be daily. Exchange rates, due to being constantly driven by ongoing market activity, change continuously. The exchange rate recorded for this model was the daily middle rate.

Other sampling possibilities were assessed and rejected. The daily closing rate on the JSE could have been used but the danger of introducing a systematic error existed. Similarly for the closing rate on the London Exchange, or any other exchange. The exchange rate

could have been recorded for several simple random or systematic samples during the course of each trading day. However, the calculation of the investment account balances for this frequency would have resulted in a larger bulk of output data without creating further insight into the research problem. A sampling period of more than one day would have created the possibility of data loss due to the fact that interest rates could have changed on the day that was not sampled and also due to the fact that the investment account balances would be calculated daily.

3.1.3. Balance calculation period

The balances of the investment accounts would be calculated daily as this is the most accurate simulation of the business problem that has led to the research question. Capital that is raised for investment projects through bank loans and overdrafts and money invested as interest bearing bank deposits have balances that are calculated daily using that days interest rate.

3.1.4. Selection of interest rate for South Africa

The type of rate chosen to illustrate the prevailing interest rate level in South Africa was the prime overdraft rate offered by South African commercial banks. This was chosen since, again, it is most closely related to the business problem that provides the context for the research issue at hand. Businesses would, in practice, raise funds from commercial banks through loans or overdrafts and occasionally use other instruments. The rates at which these funds would be lent or borrowed would be based on the prevailing prime rate with a premium or discount depending on the credit rating and risk assessment of the business concerned or the relevant project. It is worth noting that there are various other measures of the prevailing interest rate. The term and risk profiles differ for each type of rate. The use of bank prime rates in SA allows a match to be made to a rate of similar risk

in the UK. The use of, for example a bond like the R 150, which is a five year government bond could be matched by a similar type of UK bond but the risk profile is assessed differently and is influenced by a greater number of factors since these bonds are traded in a volatile market. Bond prices are often driven by speculation, as argued later, and might not reflect underlying macroeconomic trends.

3.1.5. Selection of interest rate for the UK

The rate chosen to represent the prevailing interest rate level in the UK was chosen to match the type chosen in South Africa. A similar risk, accessibility and term in the UK would be represented by their commercial banks' base rates which, as in South Africa, are used as a base for lending and overdraft rates which are then adjusted depending on the risk profile of the client. An analysis of outputs based on these respective interest rates would provide an even platform for comparison and hence testing of the international Fisher effect.

As is the case in the South African economy, there are different interest rate indicators in the UK. The rates selected for SA and the UK were selected to relate to the business problem, to reflect a similar term, a similar type and a similar risk profile. A bond in the UK that is similar to the R 150 is the UK 5 year gilt bond. In order to compare all these types of rates, the values for both the R 150 and the UK 5 year gilt bonds are recorded and illustrated in Figure 9 in Appendix viii (a).

3.1.6. Correlation test selection

The international Fisher effect implies that the balance in both the UK and South African investment accounts would always be equal in value because of the equilibrium that is proposed to exist and remain due to market forces.

It is necessary to compare the balances and conclude whether or not they are similar and to ascertain a quantitative measure of that association in a reliable and repeatable way. This is important so that a quantitative comparison can be made between the results of this study and any other simulations where one or more parameters are changed. If we used a different set of interest rates such as medium term bonds (possibly the South African R 150 and UK 5 year gilt) to calculate the balance we would test the correlation and it could be compared quantitatively to the output for the model used here. Similarly, a simulation could be carried out for other currencies and countries and the results could be compared to the output from the simulation described above.

The data used in this model and the results are of the ratio type, as opposed to interval, ordinal or nominal data. Ratio data is the most powerful type of data and hence a test that is suited for this type of data must be selected, according to Cooper and Schindler (1998).

According to Cooper and Schindler (1998) commonly used measures of association such as Chi-square, Cramer's V and Spearman's rho are designed for lower orders of data types. The commonly used measures of association for ratio type data are multiple correlation, partial correlation, biserial, correlation ratio (eta) and Pearson's product moment.

Since we have two continuous variables measured on a ratio scale parametric (which is more powerful than non-parametric) correlation testing can be used. In addition, it is not necessary for us to distinguish between a dependant and independent variable. It is only

necessary to measure the association. Therefore, bivariate correlation analysis is the most appropriate test.

The Pearson's product moment coefficient, r will reveal the magnitude and direction of the relationship between the balance of the South African investment account and the UK investment account.

3.2. Data collection

3.2.1. South African interest rates

The historical data series of interest rates was sourced from the South African Reserve Bank (SARB) archives.

The SARB publishes quarterly reports that contain tables of prevailing interest rates. Various data series and time series are available. The daily interest rates were uplifted from the electronic archive and forwarded by Madelaine Opthof, the information officer at the reserve bank.

The interest rates are the predominant, in terms of the amount traded, prime overdraft rates offered by commercial banks in South Africa, for that given day. South African public holidays are excluded.

The values for the South African R 150 5 year government bond were uplifted from the SARB archive as a weekly series and forwarded by Jody Chabas in the research department.

3.2.2 UK interest rates

This data was obtained from the Bank of England, Monetary and Financial Statistics Division from the 29 March 2001 report update at www.bankofengland.co.uk/mfsd/rates/baserate.xls. The rate quoted is the retail banks' base rates. The data was obtained from Barclays Bank, Lloyds/TSB Bank, HSBC Bank and National Westminster. Where all the banks' rates did not change on the same day or there was a spread, the lowest value is recorded.

The values for the UK 5 year gilt government bond were uplifted from the SARB archive as a weekly series and forwarded by Jody Chabas in the research department.

3.2.3. Rand / Pound exchange rates

The Rand / Pound exchange rates were sourced from the SARB. The table of daily rates was extracted from their electronic database, compiled from quarterly reports, and forwarded by their information officer, Madelaine Opthof.

The exchange rates quoted are the daily middle rates. South African public holidays are excluded.

3.3. Simulating the investment accounts

As already described the balance of two simulated investment accounts would be calculated. One account is held in a bank in the UK and the other in a South African bank. The opening balances and the way in which the daily balances are calculated are explained in this section.

3.3.1. The UK investment account

This account would have an opening balance of £100. The current daily balance would be simply calculated as the previous daily balance plus the interest accrued up to the current day.

The interest accrued is calculated as the last closing balance multiplied by the prevailing UK interest rate, expressed as an annual rate but divided by 365 and then multiplied by the number of days in the period since the calculation of the last balance. This period is usually one day except where there was a public holiday or a weekend.

ie

$$\begin{aligned} \text{New Balance} &= \text{Old balance} & + & \text{Interest} \\ &= \text{Old balance} & + & \text{Old balance} * (\text{int\%} / 365) * (\text{period}) \end{aligned}$$

$$\begin{aligned} \text{Where} \quad \text{period} &= \text{Date [new balance]} - \text{Date [old balance]} \\ \text{Int\%} &= \text{prevailing (UK) interest rate (expressed as annual rate)} \end{aligned}$$

3.3.2. The South African investment account

This account was "opened" on the same day as the UK account. The opening balance was £100 converted to Rands at the prevailing spot rate for that day.

The daily balance for the South African investment account (in Rands) was calculated in a similar way to the UK account, the only difference being that the interest rate used was the current South African interest rate.

To compare the daily balances of the two accounts, the balance in the South African account was converted to Pounds using that days prevailing exchange rate.

All the above calculations are carried out in the spreadsheet in Appendix vii as follows:

Column A	Date
Column B	Exchange rate (R/£)
Column C	SA interest rate
Column D	UK interest rate
Column F	UK bank balance (Pounds)(calculated as described above)
Column G	UK bank balance (Rands, calculated by converting column F at that days exchange rate)
Column I	SA bank balance (Rands)(calculated as described above)
Column J	SA bank balance (Pounds, calculated by converting column I at that days exchange rate from column B)

Appendix vii is presented in electronic format as an excel file and all the embedded formulas used for these calculations can be viewed in the spreadsheet.

3.4. Correlation test

According to the international Fisher effect, there should be a correlation between the balances of the SA and UK investment accounts. The statistical test chosen as a measure of association, is the parametric correlation test, Pearson's product moment coefficient, r .

The formula for Pearson's is:

$$r = \text{SUM} [(X-x)(Y-y)] / (N-1)S_xS_y$$

where X is the UK daily balance

Y is the South African daily balance

x is the mean

y is the mean

N is the number of pairs of cases

S_x and S_y are the std dev. for X and Y

BUT SINCE

$$S_x = \sqrt{\text{sum}(x^2) / N}$$

and

$$S_y = \sqrt{\text{sum}(y^2) / N}$$

THEN

$$r = \text{sum}(XY) / \sqrt{\text{sum}(x^2) * \text{sum}(y^2)}$$

To calculate r the following steps were carried out in the spreadsheet in Appendix vii

Step 1

X^2 was calculated in column N

Step 2

Y^2 was calculated in column O

Step 3

XY was calculated in column P

Step 4

$\text{SUM}(X^2)$ was calculated in cell N1444

$\text{SUM}(Y^2)$ was calculated in cell O1444

$\text{SUM}(XY)$ was calculated in cell P1444

$[\text{sum}(x^2) * \text{sum}(y^2)]$ was calculated in cell N1446

$\text{sqrt}[\text{sum}(x^2) * \text{sum}(y^2)]$ was calculated in cell N1448

and finally

$r = \text{sum}(XY) / \text{sqrt}[\text{sum}(x^2) * \text{sum}(y^2)]$ is calculated in cell N1550

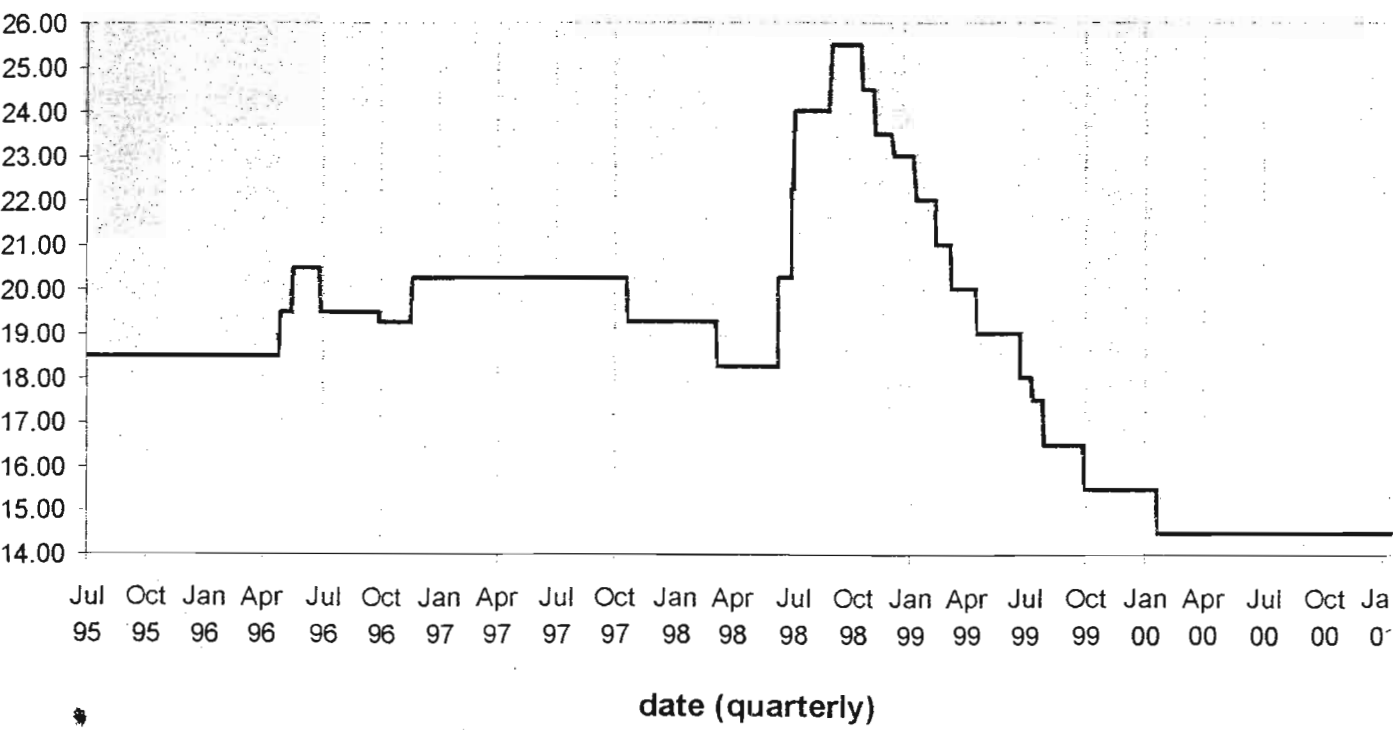
4. Results

4.1. South African interest rates

The daily time series of prevailing prime overdraft rates in South Africa is presented in Table 1, Appendix i. These rates are presented graphically in Appendix ii. The R 150 5 year bond rates are presented in Appendix viii.

Figure 2, below, is a graphical summary of the prime overdraft rate over the whole sampling period.

Figure 2, South African Interest Rates

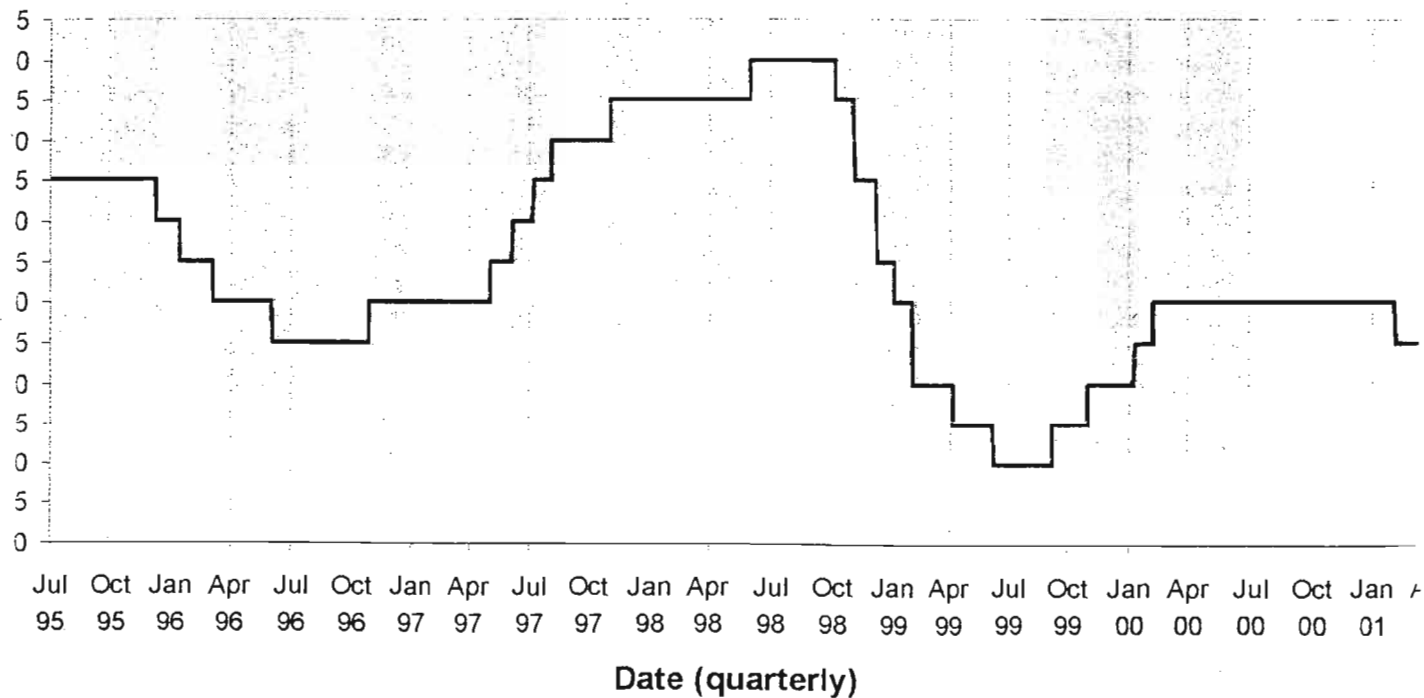


4.2. UK interest rates

The daily time series of retail banks' base rates expressed in percent per annum are presented in Table 2, Appendix iii. These rates are also presented graphically, year by year, in Appendix iv. The simulation and statistical tests are based on the daily series of banks' rates. The reasons for using this set of rates are discussed in the methodology chapter. However, for comparison and insight into the different types of interest rates, the UK 5 year gilt rates are presented in Appendix viii.

Figure 3, below, is a graphical summary of the retail banks' base rates from July 1995 to April 2001.

Figure 3, UK Interest Rates



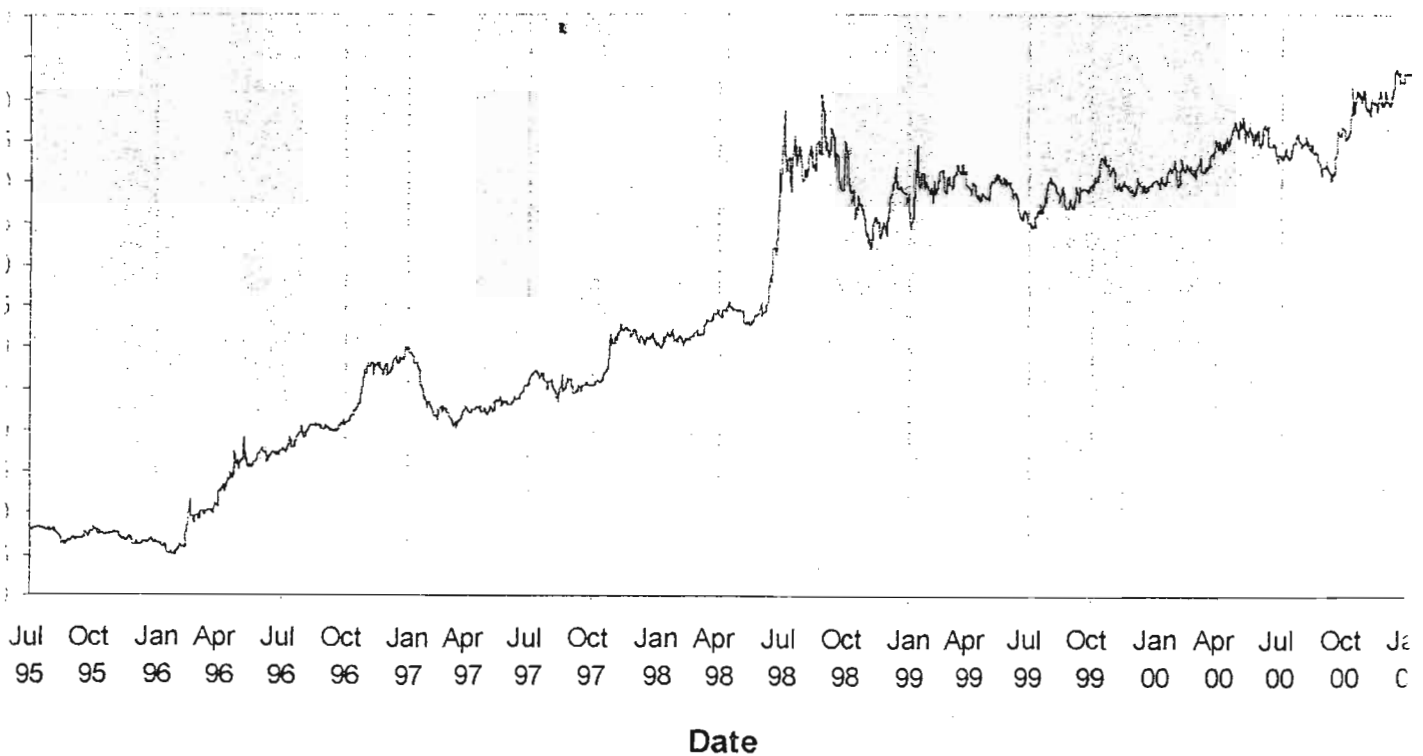
4.3. Exchange rates

Rand / Pound exchange rates are presented as a daily series in Table 3, Appendix v.

These rates are presented graphically, year by year, in Appendix vi.

Below, in Figure 4, is a summarized, graphical presentation of the value of the exchange rate from July 1995 to April 2001.

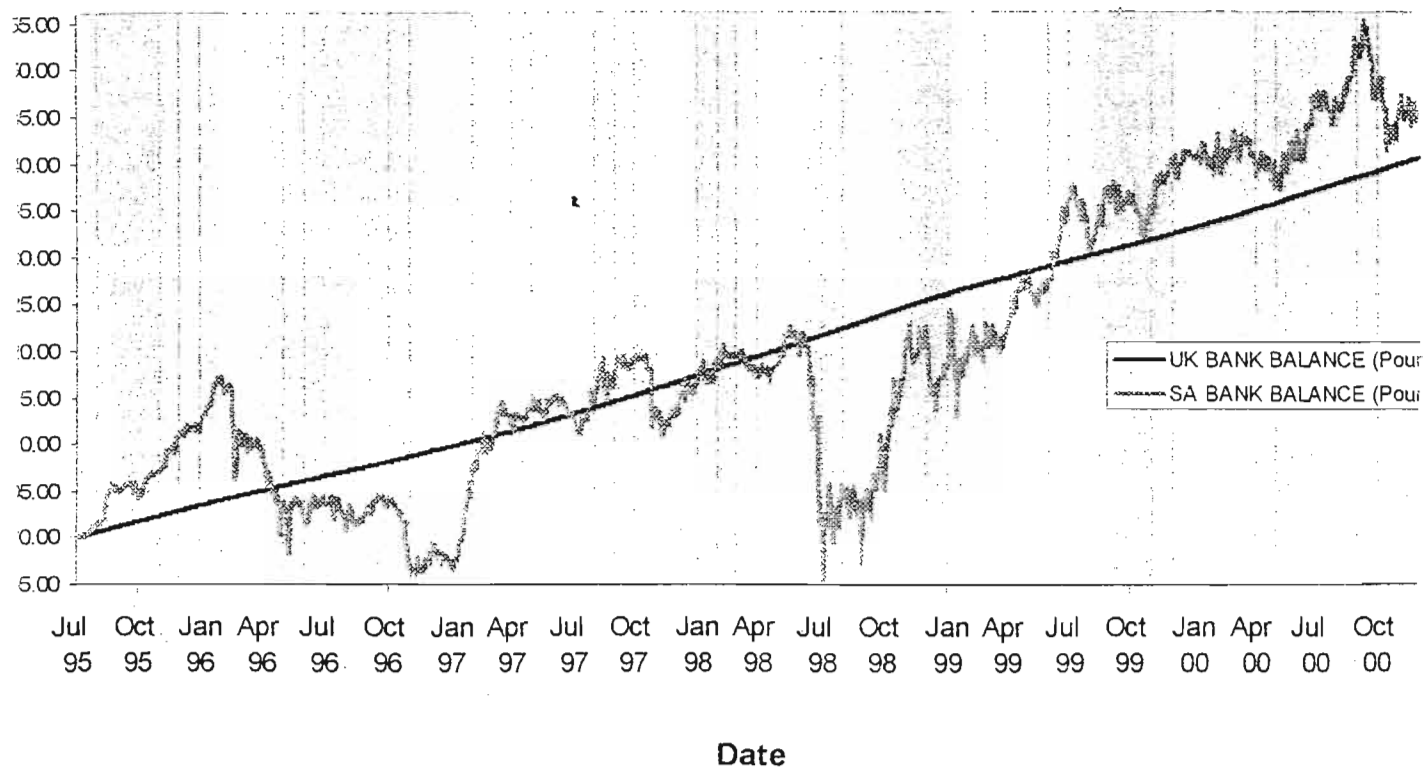
Figure 4, Exchange rates



4.4. Investment accounts

Below, in Figure 5, is a summarized, graphical comparison of the two investment account balances from July 1995 to April 2001. The calculation of the balances of the accounts is carried out in the spreadsheet in appendix vii, where the daily balances can be observed in detail.

Figure 5, Value of Investment accounts (Pounds)



4.5. Parametric correlation test

The output from the parametric correlation test is:

Pearson's product moment coefficient, $r = 0.9983115911$

5. Discussion

5.1. Comparison of SA and UK interest rates

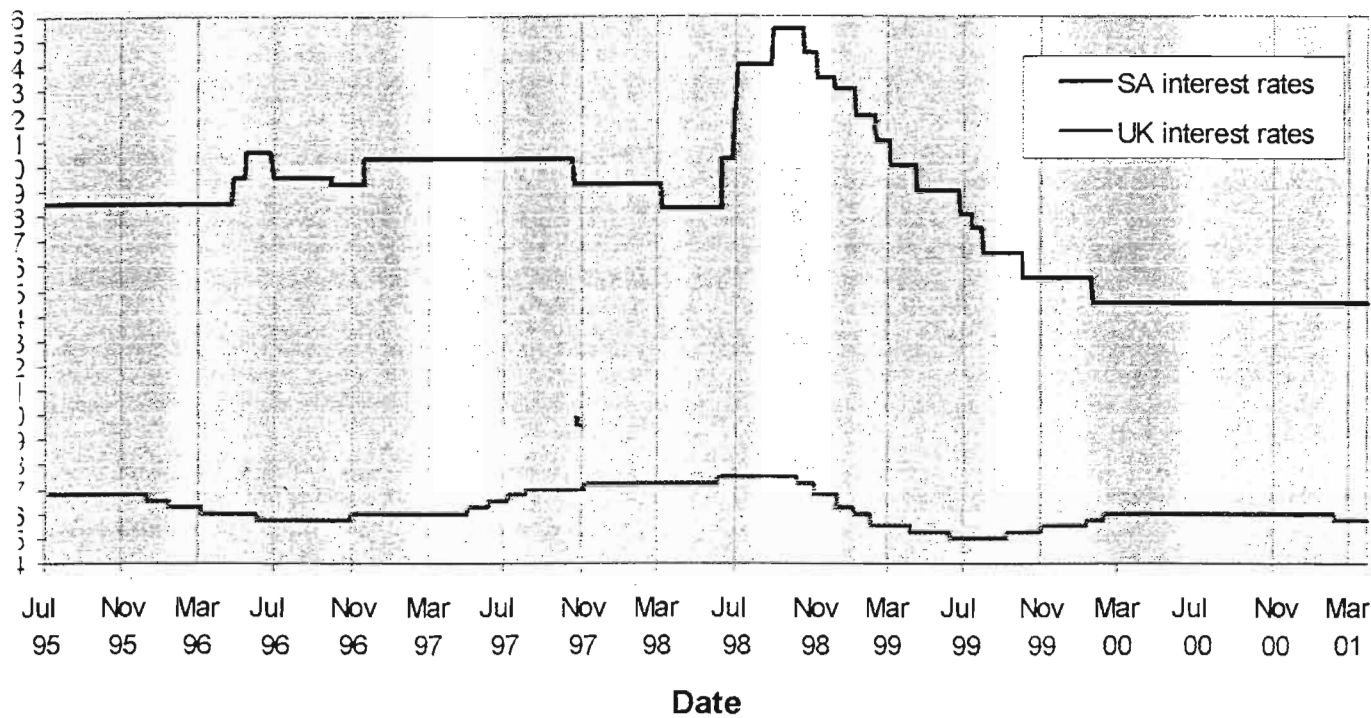
Interest rates in South Africa have been consistently higher than those in the UK over the sampling period. South African rates ranged from a low of 14.5 % from 24/1/2000 through to the end of the sampling period (2/4/2001) to a peak of 25.5% from 31/8/1998 to 16/10/1998 with a mean of 18.55 % (calculated in cell C1445 of the spreadsheet contained in Appendix vii).

The UK base rate had a low of 5 % from 10/6/1999 to 9/9/1999, a high of 7.5 % from 5/6/98 to 6/10/98 and a mean of 6.25 % (calculated in cell D1445 of the spreadsheet contained in Appendix vii)

The South African interest rates have shown neither general increasing or decreasing trends, nor cyclical patterns. There is a dramatic spike in 1998 and a steady decline until the beginning of 2000, whence it has remained constant at 14.5 %. The UK rates have shown two broad cycles, starting with a peak during the third and fourth quarters of 1995, then a trough during the third quarter of 1997, rising steadily until peaking again in the third quarter of 1998. The next trough was in the third quarter of 1999. The end of the second peak-trough cycle was the peak reached at the beginning of 2000.

These observations are illustrated below in Figure 6.

Figure 6, Comparison of SA and UK interest rates



5.1.1. Why were SA interest rates high?

Interest rates are simply "prices". Interest rates are a measure of the cost or the price of funds that are invested, lent or borrowed.

The price of funds or the level of interest is influenced by a number of factors¹. The supply and demand for funds, as for all other goods in a market economy, affects the price of that item. Simply stated, as the demand for funds increase the price or interest rate rises and as the demand for funds decrease so the interest rate should decrease.

Similarly as the supply increases, interest rates drop and as supply decreases, interest rates rise.

One of the factors influencing the supply of funds is the savings rate in a country, which depends on that society's propensity to postpone consumption and accumulate wealth as opposed to spending immediately. "In a country such as South Africa, where gross domestic saving over the past decade declined from about 25 per cent to 17 per cent of gross domestic product; where the deficit on the government's budget now absorbs private saving to an amount equal to about 6 per cent of gross domestic product (against a more normal 3 per cent of gross domestic product); where new fixed investment is growing at a rate of about 10 per cent per annum and real inventory accumulation amounted to R11 billion over the past eighteen months, and where private consumption expenditure is growing at a steady 3.5 per cent per annum, interest rates must and will be high. Were it not for the net capital inflow of about R20 billion since the middle of 1994,

¹ INTEREST RATES AND HOW THEY WORK

From the eighth in a series of fact sheets on the SARB, compiled by the Economics Department and distributed by the Corporate Communications Division
<http://www.resbank.co.za/about/fact%5Fsheets/fso8.html>

the level of interest rates would have been much higher in South Africa at this stage," according to Chris Stals.²

The demand for funds is related to the possibilities that exist to profit from investment. When borrowed funds can be used effectively and efficiently to generate profit or other beneficial outcomes, which may be strategic, political, infrastructural or for societal value, then the demand for funds is increased.

Uncertainty is a factor that influences interest rates for a number of reasons. Expectations of events and future changes are influential through the obvious argument that funds that are borrowed now are to be paid back in the future. The term of the borrowing would have an effect so as to increase the interest rate as the term increases due to the greater unpredictability over a longer period. This factor however is not relevant to the simulation used in this paper as the interest rates used are short term and the interest rates used in both the UK and South African accounts are of the same term, type and risk.

As already outlined in the four-way equivalence model, inflation and interest rates are proposed to have a relationship. Interest rates are expected to be high in an environment where inflation rates are high. This occurs simply because the bank or lender of the funds will seek protection from the erosive effect that inflation has on the purchasing power of the money lent.

This equilibrium should hold since an interest rate that is too low would cause lenders to reduce the amount of funds that are made available, thus reducing supply. At the same

² INTEREST RATES IN SOUTH AFRICA

An overview of the factors influencing interest rates, and the rationale applied by the Reserve Bank in adjusting short term interest rates

Address by Dr Chris Stals, Governor of the South African Reserve Bank,
at a meeting of The Weekend Argus/Seeff Trust Investors Club,
Cape Town, 1995-11-01

<http://www.resbank.co.za/address/1995/ad011195.html>

time the demand for funds will increase since buyers would want to make purchases before price increases occur. The decreased supply and increased demand would drive up the price of funds or the interest rate until expected inflation is sufficiently reflected in the prevailing interest rate.

Central banks, their policy and their policy levers are influential in the determination of interest rates. Central banks may engage in various practices, which causes adjustments of macroeconomic variables. The tools include fiscal policy, monetary levers and legislative instruments such as exchange control. The debate, as to which tools to use when and for what outcome, continues to be a complicated one with economic, political and social issues affecting decision making. The discussion on what the target-trigger relationship between macroeconomic variables is, is an interesting one and it is part of that debate into which this paper falls. The uncovering of the real relationships between macroeconomic variables is the key not only to management decisions but also to the making and execution of sound budgeting and monetary and fiscal policy making.

In South Africa which has a market orientated economy, the South African Reserve Bank has an important role. It is important for interest rates to be market-force driven and government intervention will reduce the efficiency of the price mechanism and may lead to permanent distortions in the flow of funds.

Money creation by the SARB is one of the factors that affect interest rates. The extension of bank credit to the private sector is the main channel of money creation. These banks borrow money from the reserve bank if the instance of a cash shortfall or a need for liquidity arises. The SARB lends money to commercial banks at the repo rate which it can control indirectly by varying the amount of liquidity it makes available or in exceptional instances it can fix the rate at the daily tender.

Changes in other countries' interest rates also affect the prevailing rates in South Africa. The South African economy is open and relatively small. If interest rates rise in other

countries then those countries might become more attractive to investors, if the risk profile remains comparable. In order to avert capital outflows a response to effect an increase in local rates must be made. Hence, South African rates tend to follow the major financial centres of the world.

Lower interest rates would depend on¹

- "the maintenance or tightening of discipline in public-sector finances;
- slower growth in bank credit extension and the money supply;
- a stronger national saving effort;
- an improvement in the current account of the balance of payments and the level of foreign reserves;
- relative strength of the currency vis-à-vis other currencies;
- declines in the rate of inflation; and
- the level of interest rates and inflation in other parts of the world"

5.1.2. The 1998 interest rate spike

In 1998, there was a prominent interest rate spike. The interest rate rose from 18.25 % on 9/6/1998 to 25.50 % on 31/8/1998.

The reason for this ³ was that the monetary policy of the SARB was influenced by events in the forex market. "The turmoil in the international financial markets was primarily transmitted to the South African economy through transactions on the Bond Exchange. In the second quarter of 1998 non-resident investors reduced their holdings of South African bonds. After having experienced net purchases of domestic bonds by non-residents to the amount of R37.3 billion in the four years up to April 1998, foreigners subsequently reduced their holdings of South African bonds by no less than R26.1 billion in the last eight months of 1998"⁴ This selling of bonds led to an excess supply of Rands in the forex market.

This situation was exploited by speculators and investors who then sold Rands to establish "short positions". This would allow them to supply the Rands owed at a profit when the value of the Rand fell.

"The Reserve Bank has been tasked by government with the responsibility to protect the value of the currency"² The SARB then reacted by buying Rands in the spot and forward markets. However the selling pressure was too severe and the result was that the nominal effective exchange rate of the Rand was still dropping sharply. The dramatic decline of the Rand against the Pound is shown in the chart, Exchange rates 1998 in Appendix vi. Evidently the SARB's attempt at halting the slide started by bond traders and speculators by intervention in the forex market did not work. The effect however was to tighten the

³ SARB, Annual Report, Monetary Policy 1999
[http://www.resbank.co.za/economics/year99/monet.html#Interest rates and yields](http://www.resbank.co.za/economics/year99/monet.html#Interest%20rates%20and%20yields)

⁴ Statement on Monetary Policy Issued by Dr C.L. Stals, 10 March 1999, "Further progress toward financial stability". <http://www.resbank.co.za/media/1999/st100399.html>

liquidity of the SARB so severely that the banks lending rate, the repo rate, rose sharply causing the observed spike.

An alternate view is that the SARB, having failed in the first instance, used a hike in interest rates to defend the value of the Rand.

By the fourth quarter international markets stabilised and the SARB took a softer stance. The interest rate peaked in October of 1998 at 25.5 % and dropped steadily to the 2001 level of 14.5 %, as can be seen from Figure 2, South African interest rates, in Section 4.1.

There is a significant deviation from the trendline in the third quarter in 1998. The exchange rate rose dramatically above the trendline for this period. The exchange rate rose from about 8.5 R/£ to about 11R/£ while the trendline remained between 8.7 R/£ to 9.0 R/£. This corresponds with the interest rate spike that occurred in SA during that time, which is described in section 5.1.2 where the reasons for the spike are also discussed. Interest rates in SA rose dramatically while those in the UK remained between 7.25 % and 7.5 %.

There is also an observable deviation where the exchange rate rose above the trendline during the fourth quarter of 1996 until the beginning of 1997. During this period the interest rates in SA were peaking between 19.25 % on the 1/10/1996 and remained at 20.25 % through the first quarter of 1997. At the same time, UK interest rates were at a trough with the base rate at 5.75 %. These movements can be observed in the graphs of the SA and UK interest rates presented in the results sections 4.1 and 4.2. As the gap in the interest rates widened it is observed that the exchange rates rose to a peak, in accordance with the international Fisher effect.

In the fourth quarter of 1995, continuing into the first quarter of 1996 the actual exchange rate deviates from the trend line again. This time however the exchange rate is below the trend line. The exchange rate is around 5.5 R/£ while the trendline is between 6.0 and 6.5 R/£. A look at interest rate movements during this period reveals that the UK rates were at a peak in the cycle, at 6.75 % at the end of 1995 and began to drop off in the first and second quarters of 1996. The SA rates were at a (relative) low of 18.5 % before rising to a peak of 21.5 % in the second quarter of 1996. Here it is observed that where the gap in interest rates narrowed (the UK rates are at a peak and SA rates at a low) the exchange rate dropped below the trend line, which once again is in accordance with the international Fisher effect.

A similar deviation occurred in the third quarter of 2000. The actual exchange rate was 10.02 R/£ on the 13/9/2000 while the trendline was at about 11.00 R/£. However the interest rate in SA was 14.5 % and had been at that value since the first quarter of 2000 and remained at that value well into 2001. Similarly, the UK interest rate had been stable at 6.0 % since the end of the first quarter of 2000 to the beginning of the first quarter of 2001. Therefore, the deviation of the actual exchange rate from the trend line cannot be attributed to relative changes between the SA and UK interest rate.

A possible reason for this deviation could have been turbulence in the forex markets caused by the increased dollar strength due to a rise in oil prices as a result of Middle Eastern events. Since oil is traded in dollars higher oil prices mean greater demand for dollars and hence an increase in the price of dollars. In the third quarter of 2000⁵ "political tension in the Middle East and continued increases in international petroleum prices led to a further deterioration in investor sentiment and increased volatility in currency markets during October 2000. Amid this heightened turbulence, the exchange rate of the Rand declined by 1.2 per cent on a weighted basis from the end of September 2000 to the end of October 2000 and by 3.7 per cent against the US dollar. Despite having depreciated sharply against the US dollar, the exchange rate of the Rand held up well against a basket of currencies of South Africa's major trading-partner countries." Therefore it may be suggested that the Pound and Euro were affected more drastically than the Rand during this period causing the deviation we have observed. This, however is a purely speculative suggestion.

⁵ Quarterly Bulletin, December 2000, No. 218, South African Reserve Bank
[http://www.resbank.co.za/economics/qbuldec00/foreign.html#Exchange rates](http://www.resbank.co.za/economics/qbuldec00/foreign.html#Exchange%20rates)

It has been shown in this section that the general trend of exchange rate movements has been upward, in accordance with the international Fisher effect, since interest rates in SA have been higher than those in the UK. There have been deviations from the general trend. In two cases where the deviation was upward it corresponded with an increase in the difference in interest rates between SA and the UK, as would be expected if the international Fisher effect was to hold. In one case where the rate dropped below the trend line there was again the expected corresponding change (decrease) in the difference between interest rates. In the other instance of the exchange rate dropping below the trend line, the deviation could not be attributed to relative changes in interest rates but could be attributed to other causes, an example of which is suggested in the text.

From a cursory examination of the results, it is observed that the international Fisher effect has held in general over the whole sampling period. Some short term deviations are in accordance with the theory but deviations from the expected interest rate-exchange rate relationship also do exist.

5.3. The investment simulation and statistical tests

An examination of the interest rate movements and exchange rate movements, in the previous sections, has provided a clue as to the extent to which the international Fisher effect has held true for the relationship between South Africa and the UK.

However, as described in the methodology and data collection chapter a quantitative measure of the relationship has been carried out. This has been done by simulating two investments and calculating the balances in these investment accounts, through the sampling period. It is worth remembering that the simulation is actually an uncovered interest arbitrage. According to the four-way equivalence model and the international Fisher effect, in particular, such a set of transactions should yield no profit or loss due to the proposed existence of equilibrium in the forex market.

It is also important to remember that this simulation is an approximation since middle rates are used. In reality, there would be a difference between the buy and sell rates called a bid-ask spread.

Recalling that the international Fisher effect states that the interest agio expressed as

$$(IR - I_{\text{£}}) / (1 + I_{\text{£}})$$

is equal to the exchange rate agio which is expressed as

$$(S_t - S_0) / S_0$$

where	S_0	=	spot exchange rate
	S_t	=	expected spot exchange rate
	IR	=	Interest rate in SA
and	$I_{\text{£}}$	=	interest rate in UK

Before looking at the result of the uncovered interest arbitrage (the simulated investment accounts) it is worth calculating the agios over the whole sampling period:

$$\begin{aligned}
 (IR5 - I£5) / (1 + I£5) &= (0.1850 - 0.0675) / (1 + 0.0675) * (2100) / 365 \\
 &= 0.11007 * 5.75342 \\
 &= \underline{0.633275} \\
 (S1442 - S5) / S5 &= (11.4016 - 5.7914) / 5.7914 \\
 &= \underline{0.96871}
 \end{aligned}$$

where IR5 is the SA interest rate at the beginning of the sampling period

I£5 is the UK interest rate at the beginning of the sampling period

S1442 is the exchange rate at the end of the sampling period

S5 is the exchange rate at the beginning of the sampling period

2100 is the number of days in the sampling period

All these values are taken from the spreadsheet in Appendix vii

$$\begin{aligned}
 \text{The difference in the agios is} & (0.633275 - 0.96871) / 0.96871 \% \\
 & = \underline{34.63 \%}
 \end{aligned}$$

$$\begin{aligned}
 \text{Rearranging the above equation:} & (IR - I£) / (1 + I£) = (St - So) / So \\
 \text{therefore} & St = (IR - I£) / (1 + I£) * So + So
 \end{aligned}$$

And substituting the values as used above yields:

$$\begin{aligned}
 St &= (0.1850 - 0.0675) / (1 + 0.0675) * (2100 / 365) * 5.7914 + 5.7914 \\
 &= \underline{9.4589 \text{ R / £}}
 \end{aligned}$$

The difference between the expected spot rate and the real spot rate is:

$$\begin{aligned} (S_t - S_{1442}) / S_t \% &= (9.4589 - 11.4016) / 9.4589 \% \\ &= \underline{20.54 \%} \end{aligned}$$

These calculations show that the interest and exchange agios across the whole sampling period are significantly different (34.63%). Also, the difference between the expected exchange rate S_t , as output from the rearranged equation is significantly different (20.54%) from the actual exchange rate at the end of the period. However, it must be noted that the agio calculations span the entire sampling period and only reflect the values at the beginning and the end of the sampling period, ignoring all the values in between. There are significant fluctuations and changes in the interest rates during the sampling period and there is volatility in the exchange rate so these agios cannot be relied upon as a measure of the validity of the international Fisher effect. The agios were also calculated daily, as can be seen in columns K and L in the spreadsheet in Appendix vii. However, because the interest rates are expressed as annual rates, the daily calculations yield numbers that are too small to have statistical significance.

For a reliable quantitative measure of the validity of the international Fisher effect we return to our simulated investment accounts, which as mentioned reflect the actions of a trader making an uncovered interest arbitrage.

As stated in the research design section the initial (at 3/7/1995) investment was £100. At the end of the period (2/4/2001) the UK bank balance was £143.18. The balance in the UK account increased steadily at an almost linear rate, as can be seen from the graph in section 4.4 of the results. This type of growth has occurred because of the relatively (compared to the SA prime rate) stable UK interest rate which had a low of 5%, a high of 7.5% and a mean of 6.25 % over the sampling period.

$$\begin{aligned}\text{The growth of the UK balance} &= 143.18 - 100 / (100) \\ &= 43.18 \% \text{ over the sampling period.}\end{aligned}$$

$$\begin{aligned}\text{The growth of the SA balance} &= (R579.14 - R 1632.53) / (R 579.14) \\ &= 181.89 \% \text{ over the sampling period}\end{aligned}$$

where R579.14 is the opening balance of the SA account
R1632.53 is the closing balance of the SA account

These values are calculated in the spreadsheet in Appendix vii

The higher growth rate in the SA account is due to the higher interest rates in SA as discussed earlier.

The closing balance in Pounds (converted at the spot exchange rate) of the SA account was

£ 147.41

The difference between the SA account and UK account closing balances is

$$\begin{aligned}&(147.41 - 143.18) / (143.18) \\ &= 2.95 \%\end{aligned}$$

In other words for the sampling frame used in this instance an investor who made an uncovered interest arbitrage would have yielded a 2.95 % profit over the entire sampling period of 5 years and 9 months! Expressing this as an annualised (linearly) rate yields an

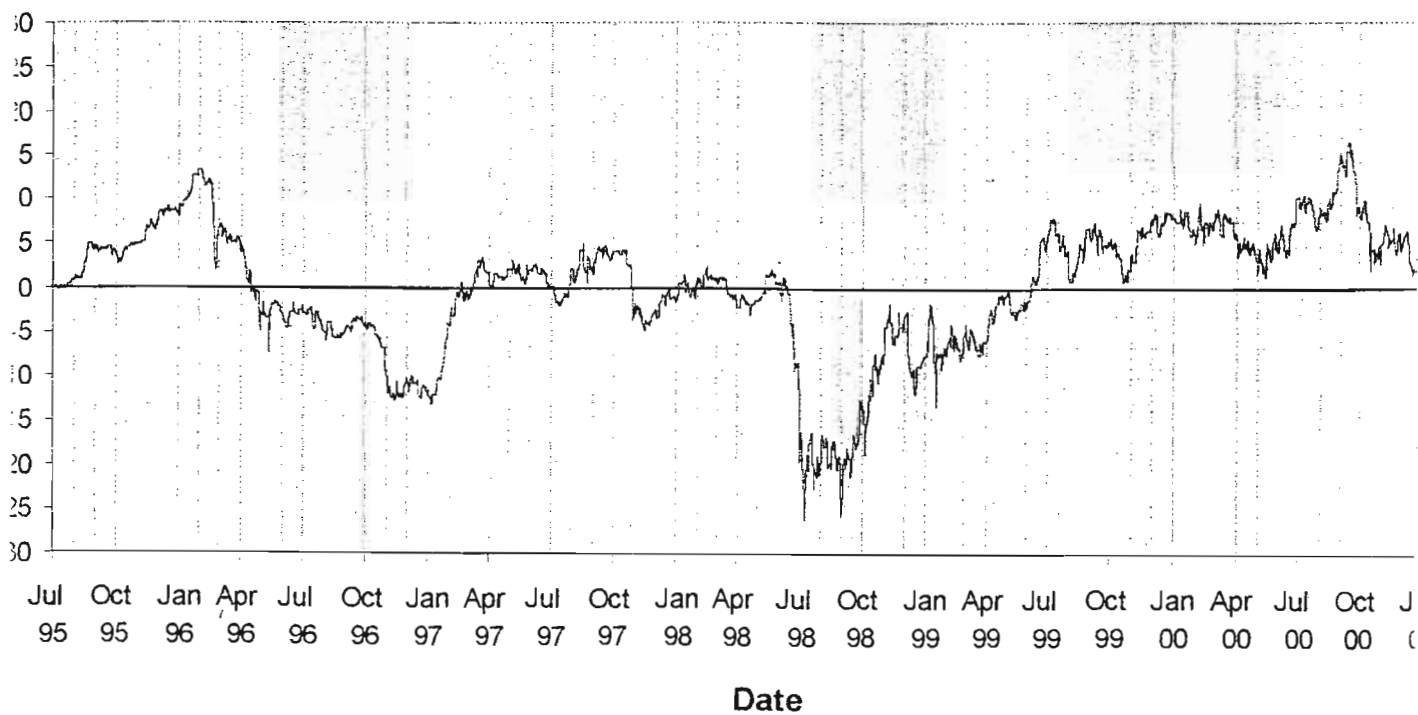
$$\begin{aligned}\text{annualised return} &= 2.95 / 5 \text{ years and 9 months} \\ &= 2.95 / (2100 / 365) \\ &= 2.95 / 5.75 \\ &= \underline{0.51 \%}\end{aligned}$$

Remembering that middle rates are used and that in reality there would be a bid-ask spread and transaction charges, this small profit would be absorbed in transaction costs and the net result would be close to a profitless set of transactions, as suggested by theory.

It must be pointed out here, that the start and finish date of the simulated arbitrage influences the outcome. At certain times equilibrium does not exist and at some times it is possible to show a greater profit while at other times a significant loss occurs.

To illustrate this, the difference between the balance of the two accounts is calculated, daily, over the sampling period. This shows the possible profit / loss that would be achieved if the SA account were to be closed and the proceeds sold for Pounds at that days spot exchange rate (that is if the arbitrage were to be concluded on that day). The calculations are made in column Q of the spreadsheet in Appendix vii and a graphical summary of the result is shown below in figure 8.

Figure 8, Profit / Loss



As can be seen from this graph, and the calculations in Column Q of the spreadsheet in appendix vii, the maximum profit that could have been achieved would have been £16.485 if the arbitrage was concluded on 12/9/2000.

This is equal to $(16.485)/(100)$
 $= 16.845 \% \text{ over the sampling period, or annualised linearly(simple)}$
 $= 16.485 \% * 365/1898$
 $= 3.025 \% \text{ pa}$

where 1898 is the number of days from the beginning of the sampling period to the date 12/9/2000.

The maximum loss that could have been sustained was £26.05 and would have occurred if the SA account was closed on 6/7/98.

The arithmetic mean of the profit and loss, calculated in cell Q1450 in the spreadsheet in Appendix vii, is 0.17434. If the investment was terminated on any given day during the sampling period some days would have yielded a profit and others would have yielded a loss as shown in the above paragraphs, but the mean of 0.17434 which is very close to zero $[(£0.17434/ £100) = 0.17434 \% \text{ of the initial investment}]$ implies that by choosing a number of dates randomly, on which to end the investment period, to test whether the yield would be a profit or a loss, the net outcome would be close to a profitless transaction.

It has been calculated that the profit at the end of the sampling period would be 2.95 % of the initial investment or annualised linearly, 0.51 %. This, it was argued is biased since the end date is fixed. However, removing the bias of that particular end date by considering the mean profit / loss, as described in the previous paragraph, yields a net result of a profit of 0.17434 % of the initial investment. Therefore both these observations

are close enough to zero to indicate that the uncovered interest arbitrage simulated here yields a zero profit / loss result.

The international Fisher effect states that the balance in both the UK and SA accounts should be equal throughout the sampling period. An examination of the graph in section 4.5 of the results shows that in general, over the whole sampling period the balance of the South African account has followed the balance in the UK account. Obviously, the opening balance of both the accounts is the same £100. The closing balances have been discussed above and the closing, maximum and minimum profit / losses have been explored.

The largest deviation occurred during the third and fourth quarters of 1998. It was during this period that the highest loss would have occurred, if the arbitrage was concluded, as shown above. The interest rate spike discussed in detail in section 5.1.2. occurred during this time. It was also a period of volatile movement in exchange rates as a result of events in the international foreign exchange markets. This was especially true for emerging markets since they were affected by the Asian crisis at this time.

It is apparent that this period, where the value of the South African investment was lowest corresponded to a dip in the value of the Rand relative to the Pound, a spike in South African interest rates and volatility in the forex market.

A similar deviation occurred during the end of the last quarter of 1996 and the beginning of the first quarter of 1997. Here too, the value of the SA investment dips and at the same time the exchange rate peaks and the interest rate difference increases, as shown earlier.

At the end of 1995 the balance of the SA investment account peaked. This was a period where the exchange rate dipped below the trendline and the interest rate difference was reduced, as shown before.

In the last quarter of 2000 the SA investment account once again overshoots the UK account. During this time the exchange rate dipped below the trend line but there was no (relative) change in interest rates.

From these deviations it may be reasonable to suggest that the best times to have concluded the arbitrage are when the exchange rate (R/\pounds) is low and when the interest rate gap is at a low phase. The time when the largest losses would be incurred would be when the exchange rate is peaking, when interest rates in SA are high and when there is volatility in the forex markets.

5.4. Pearson's correlation test

Lastly, the result of the correlation test is considered. As stated in the research design it is necessary to measure the correlation between the two investment accounts quantitatively. Thus ensuring that this test of the international Fisher effect can be repeated with different data sets and the correlation compared. Other interest rates may be used, other countries may be used and other sampling periods may be used. It is necessary to have a known, repeatable quantitative method for assessing the validity of the theory so that these comparisons can be made.

The bivariate correlation test used is Pearson's product moment coefficient, r . The calculation of r is explained in detail in section 3.4. in the research design chapter. The result of the calculation, from section 4.5. in the results chapter, is

$$r = +0.9983115911$$

r reveals the magnitude and direction of the relationship between sampled data sets; in this case, r measures the magnitude and direction of the relationship between the SA investment account balance and the UK investment account balance.

Pearson's r can vary over the range from -1 to +1. The sign, positive or negative, indicates whether the variables move in unison or opposition, respectively. The positive sign of r in this instance indicates that as the balance in one investment account increases so does the balance in the other account. There is a positive correlation. It must be remembered that correlation does not imply causality.

The international Fisher effect implies that there would be positive correlation between these two account balances. The result that there is positive correlation therefore does not disagree with the theory. The international Fisher effect, however, goes further than just stating that there would be positive correlation. It states that the account balances would be equal. This requires that a linear relationship must exist between the variables and furthermore that the linear coefficient must be equal to one.

According to Cooper and Schindler (1998), "the designation r symbolizes the coefficient's estimate of linear association based on the sampling data" They go on to state that when $r = 1$ then a perfect positive relationship exists, when $r = 0$ no relationship exists and when $r = -1$ then a perfect negative relationship exists.

The value of r for the data sets in this case is close to 1 and implies a near perfect positive relationship. The calculated value of r can be used for comparison and is an indication that the international Fisher effect holds for South Africa and the UK.

The common variance calculated as r^2 , the coefficient of determination, is

$$\begin{aligned} r^2 &= 0.9983115911^2 \\ &= 0.996626 \end{aligned}$$

According to Cooper and Schindler (1998) r^2 indicates the overlap between two variables and the proportion of their common or shared variance. The implication is that 99.66 percent of the variance in the SA account is explained by the UK account and vice versa.

A number of characteristics of the investment accounts are shown through the statistical tests performed. There is a positive relationship between the value of the SA account and the UK account. This positive relationship is linear. Furthermore, the linear coefficient is close to one. In addition, the common variance is close to one.

These results indicate that the account balances of the SA and UK accounts are statistically similar. This implies that the international Fisher effect between the UK and South Africa for the period July 1995 to April 2000 is valid.

6. Conclusions

6.1. The international Fisher effect

The four-way equivalence model is a set of theories that proposes a relationship between macroeconomic variables. It states that inflation rates, interest rates, spot exchange rates, expected exchange rates and forward exchange rates are maintained in equilibrium by market forces and economic fundamentals. Making up one leg of this model, is a theory called the international Fisher effect. The international Fisher effect states that the difference in interest rates between countries predicts the change in exchange rates between their currencies. The implication is that an uncovered interest arbitrage would be a profitless transaction.

Studies have been carried out to explore the relationships proposed by the four-way equivalence model. Researchers have found it impossible to create a model that predicts exchange rates or even explain their movements after the fact. Research on the international Fisher effect has produced mixed results. In general the international Fisher effect holds in the longer term but is unreliable in the short term.

It was found that South African interest rates were consistently higher than those in the UK, over the sampling period. Interest rates in SA were more volatile. Interest rates in the UK were not only lower but also more stable and moved in a cyclical manner. Factors that influence interest rate levels include the demand for funds, which is related to the opportunities that exist to use funds profitably. In addition, by the laws of supply and demand, availability (supply) of funds influences interest rates, which are simply a reflection of the cost or price of funds. The savings rate, uncertainty, inflation, central banks, their monetary policy, and the international markets also influence the level of interest rates in most free market economies.

Some reasons for the high interest rates in SA include high inflation, a low national savings ratio, the small size and openness of South Africa's economy, the vulnerability to events in the international market and the SARB's monetary policy. There was a significant interest rate spike in SA in 1998 because of speculative events in the bond and forex markets.

The exchange rate between the Rand and the Pound increased throughout the sampling period, with some deviations. Given the difference in interest rates, this is in accordance with the international Fisher effect.

The simulated investment, which is an uncovered interest arbitrage, showed that from an examination of the graphical summary of the results, the balances of the two accounts do track each other over the sampling period, with some deviations. It was found that the value of the South African investment was lowest in times of volatility in the international forex market, when the Rand/Pound exchange rate was high and when interest rates in SA were high.

Calculation of the interest and exchange agios showed that there was a significant departure from the international Fisher effect. Using the international Fisher effect to predict the exchange rate also produces a result that shows the theory to be inaccurate. It was noted that these calculations consider only the opening and closing balances and therefore cannot be considered conclusive. However, comparing the actual growth of both the accounts and the change (real) in exchange rates it was found that the transactions were indeed profitless.

The maximum profit and maximum loss that could have been sustained was calculated but it was shown that the mean profit/loss over the sampling period was close to zero and again indicates a profitless transaction.

The bivariate correlation test that was used to compare the balances of the two accounts indicated that the account balances were statistically similar over the sampling period.

The recording of the exchange rates and interest rates and the simulation of an uncovered interest arbitrage have shown that exchange rates and interest rates are linked. Changes in interest rates affect exchange rate movement and exchange rate movement affects interest rate levels. Domestic economic factors, central bank policy and international economics affect interest rates and exchange rates. There are short term deviations from the international Fisher effect, some which can be explained by changes in macroeconomic variables and others that can be explained by, at best, speculative suggestion. After these short term deviations, interest rate levels and exchange rate levels return to a position of equilibrium, and the result is that in the medium term the international Fisher effect holds.

6.2. Implications for business practice

When faced with the opportunity to source funds from other countries, financial managers should be aware that significant losses could be sustained in the short term. Conversely, there does exist scope to show profit due to investing in higher interest rate environments, in the short term. These activities are risky because they depend on unreliable existing models. The movements of exchange rates in the short term are volatile, subject to speculative forces and unpredictable events in the international market.

Arbitrageurs and speculators may profit from the volatile forex market if, as the more cynical would believe, luck would have it.

In the medium term the net result of the numerous, unpredictable and difficult to explain deviations, are virtually profitless outcomes. Unless it is the core competence of a firm to predict macroeconomic variable movements and beat the market it should be recognized that an international business should engage in a conservative financing policy, which would include covering investments and receivables forward, and focus on developing and exploiting its sustainable business advantage by competing on the basis of its products and services.

6.3. Recommendations for further study

Testing the international Fisher effect for different sets of currencies using the same (simulation) method would provide a basis for comparison of the extent to which the theory applies in different economic regimes. Is there a link between the size of an economy and the validity of the four-way equivalence model? Is the validity of the international Fisher effect influenced by the openness of an economy, the independence of the central bank, the level of exchange control, the strength of free market forces, the stability of the government regime, the level of democracy, the level of industrialisation or technology implementation?

By identifying which sets of countries or currencies tend to behave more in the manner which the four-way equivalence model predicts and by isolating the unique factors in those economies, it might be possible to identify under what circumstances the model is more likely to hold. This might result in further understanding in the search for the Holy Grail of international economics: the unraveling of the relationship between exchange rates and macroeconomic variables.

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DATE	EXCHANGE	SA INTEREST	UK INTEREST	UK BANK BALANCE		SA BANK BALANCE		interest	exchange	difference	F ²	J ²	F ²	F - J
public holidays	RATE	RATE	RATE	(Pounds)	(Rands)	(Rands)	(Pounds)	ago	ago	K-L				profit /
are omitted	rand / pound	(prime)	(bank rate)											loss
1995 Jul 03	5.7914	18.50	6.75	100.00	579.14	579.14	100.00	0.0003			10000	10000	10000	0
1995 Jul 04	5.7908	18.50	6.75	100.02	579.19	579.43	100.06	0.0003	1.72E-08	0.000322	10003.7	10012.21	10008	0.0426
1995 Jul 05	5.8071	18.50	6.75	100.04	580.92	579.73	99.83	0.0003	-4.67E-07	0.000322	10007.4	9996.81	9986.77	-0.206
1995 Jul 06	5.7971	18.50	6.75	100.06	580.03	580.02	100.05	0.0003	2.87E-07	0.000322	10011.1	10010.73	10010.9	-0.002
1995 Jul 07	5.812	18.50	6.75	100.07	581.63	580.32	99.85	0.0003	-4.27E-07	0.000322	10014.8	9969.57	9992.16	-0.226
1995 Jul 10	5.815	18.50	6.75	100.13	582.25	581.20	99.95	0.0003	-8.8E-08	0.000322	10025.9	9989.596	10007.7	-0.182
1995 Jul 11	5.8022	18.50	6.75	100.15	581.08	581.49	100.22	0.0003	3.67E-07	0.000321	10029.6	10043.89	10036.8	0.0712
1995 Jul 12	5.8154	18.50	6.75	100.17	582.51	581.79	100.04	0.0003	-3.73E-07	0.000322	10033.3	10008.49	10020.9	-0.124
1995 Jul 13	5.8097	18.50	6.75	100.19	582.05	582.08	100.19	0.0003	1.63E-07	0.000322	10037	10038.3	10037.7	0.0063
1995 Jul 14	5.8267	18.50	6.75	100.20	583.38	582.38	99.95	0.0003	-4.87E-07	0.000322	10040.8	9989.933	10015.3	-0.254
1995 Jul 17	5.8139	18.50	6.75	100.28	582.90	583.26	100.32	0.0003	3.67E-07	0.000321	10051.9	10064.51	10058.2	0.0628
1995 Jul 18	5.8223	18.50	6.75	100.28	583.85	583.56	100.23	0.0003	-2.41E-07	0.000322	10055.6	10045.66	10050.6	-0.05
1995 Jul 19	5.817	18.50	6.75	100.30	583.42	583.85	100.37	0.0003	1.52E-07	0.000322	10059.3	10074.18	10066.8	0.0739
1995 Jul 20	5.8112	18.50	6.75	100.31	582.95	584.15	100.52	0.0003	1.86E-07	0.000322	10063.1	10104.54	10083.3	0.2065
1995 Jul 21	5.8065	18.50	6.75	100.33	582.59	584.45	100.65	0.0003	1.35E-07	0.000322	10066.8	10131.16	10098.9	0.3203
1995 Jul 24	5.8131	18.50	6.75	100.39	583.57	585.33	100.69	0.0003	-1.88E-07	0.000322	10078	10138.93	10108.4	0.3032
1995 Jul 25	5.8052	18.50	6.75	100.41	582.89	585.63	100.88	0.0003	2.28E-07	0.000322	10081.7	10176.86	10129.2	0.4728
1995 Jul 26	5.7859	18.50	6.75	100.43	581.06	585.93	101.27	0.0003	5.53E-07	0.000321	10085.4	10255.25	10170	0.842
1995 Jul 27	5.7986	18.50	6.75	100.44	582.44	586.22	101.10	0.0003	-3.64E-07	0.000322	10089.1	10220.73	10154.7	0.6529
1995 Jul 28	5.7921	18.50	6.75	100.46	581.89	586.52	101.26	0.0003	1.86E-07	0.000322	10092.9	10254.07	10173.2	0.7991
1995 Jul 31	5.8033	18.50	6.75	100.52	583.34	587.41	101.22	0.0003	-3.21E-07	0.000322	10104.1	10245.62	10174.6	0.7016
1995 Aug 01	5.7787	18.50	6.75	100.54	580.98	587.71	101.70	0.0003	7.05E-07	0.000321	10107.8	10343.51	10225	1.1654
1995 Aug 02	5.7934	18.50	6.75	100.58	582.58	588.01	101.50	0.0003	-4.21E-07	0.000322	10111.6	10301.52	10206.1	0.9402
1995 Aug 03	5.7971	18.50	6.75	100.57	583.04	588.31	101.48	0.0003	-1.08E-07	0.000322	10115.3	10298.81	10206.6	0.9082
1995 Aug 04	5.7931	18.50	6.75	100.59	582.75	588.81	101.60	0.0003	1.15E-07	0.000322	10119	10323.49	10220.3	1.0111
1995 Aug 07	5.8087	18.50	6.75	100.65	584.44	589.50	101.52	0.0003	-3.9E-07	0.000322	10130.3	10306.46	10218	0.8715
1995 Aug 08	5.7899	18.50	6.75	100.67	582.86	589.80	101.87	0.0003	4.81E-07	0.000321	10134	10376.87	10254.7	1.1991
1995 Aug 10	5.7791	18.50	6.75	100.71	581.98	590.40	102.16	0.0003	3.09E-07	0.000322	10141.5	10436.82	10238.1	1.4557
1995 Aug 11	5.7594	18.50	6.75	100.72	580.11	590.70	102.56	0.0003	5.64E-07	0.000321	10145.3	10518.99	10330.4	1.8384
1995 Aug 14	5.7231	18.50	6.75	100.78	576.77	591.59	103.37	0.0003	1.04E-06	0.000321	10156.5	10685.28	10417.5	2.59
1995 Aug 15	5.7239	18.50	6.75	100.80	576.96	591.89	103.41	0.0003	-2.29E-08	0.000322	10160.3	10693.12	10423.3	2.6093
1995 Aug 16	5.6902	18.50	6.75	100.82	573.67	592.19	104.07	0.0003	9.65E-07	0.000321	10164	10831.13	10492.3	3.2558
1995 Aug 17	5.6405	18.50	6.75	100.84	568.76	592.49	105.04	0.0003	1.42E-06	0.00032	10167.8	11034.02	10592.1	4.2074
1995 Aug 18	5.6389	18.50	6.75	100.85	568.71	592.79	105.13	0.0003	4.58E-08	0.000322	10171.6	11051.47	10602.4	4.2718
1995 Aug 21	5.6482	18.50	6.75	100.91	569.96	593.70	105.11	0.0003	-2.66E-07	0.000322	10182.9	11046.63	10606.9	4.2024
1995 Aug 22	5.6132	18.50	6.75	100.93	568.53	594.00	105.82	0.0003	1E-06	0.000321	10186.6	11198.19	10680.4	4.8927
1995 Aug 23	5.6173	18.50	6.75	100.95	567.05	594.30	105.80	0.0003	-1.17E-07	0.000322	10190.4	11193.19	10680	4.8504
1995 Aug 24	5.6473	18.50	6.75	100.97	570.19	594.80	105.29	0.0003	-8.59E-07	0.000323	10194.2	11085.81	10630.6	4.323
1995 Aug 25	5.6417	18.50	6.75	100.98	569.73	594.90	105.45	0.0003	1.6E-07	0.000322	10197.9	11119.09	10648.6	4.4623
1995 Aug 28	5.6759	18.50	6.75	101.04	573.50	595.81	104.97	0.0003	-9.79E-07	0.000323	10209.2	11018.93	10606.4	3.9303
1995 Aug 29	5.6632	18.50	6.75	101.06	572.32	596.11	105.26	0.0003	3.63E-07	0.000321	10213	11079.63	10637.5	4.2003
1995 Aug 30	5.6495	18.50	6.75	101.08	571.04	596.41	105.57	0.0003	3.92E-07	0.000321	10216.8	11144.72	10670.7	4.4904
1995 Aug 31	5.6866	18.50	6.75	101.10	573.08	596.71	105.27	0.0003	-5.47E-07	0.000322	10220.6	11080.97	10642.1	4.1693
1995 Sep 01	5.6746	18.50	6.75	101.12	573.79	597.01	105.21	0.0003	-1.72E-07	0.000322	10224.4	11068.76	10638.2	4.0926
1995 Sep 04	5.7066	18.50	6.75	101.17	577.35	597.92	104.78	0.0003	9.16E-07	0.000323	10235.7	10978.28	10600.5	3.6056
1995 Sep 05	5.6866	18.50	6.75	101.19	575.43	598.23	105.20	0.0003	5.72E-07	0.000321	10239.5	11068.85	10645.1	4.0087
1995 Sep 06	5.6886	18.50	6.75	101.21	575.74	598.53	105.22	0.0003	-5.72E-08	0.000322	10243.3	11070.28	10648.3	4.0083
1995 Sep 07	5.6827	18.50	6.75	101.23	575.25	598.83	105.38	0.0003	1.69E-07	0.000322	10247.1	11104.53	10667.2	4.1502
1995 Sep 08	5.6711	18.50	6.75	101.25	574.18	599.14	105.65	0.0003	3.32E-07	0.000322	10250.9	11161.31	10696.4	4.4006
1995 Sep 11	5.6915	18.50	6.75	101.30	576.56	600.05	105.43	0.0003	-5.84E-07	0.000322	10262.2	11115.17	10680.2	4.1258
1995 Sep 12	5.6866	18.50	6.75	101.32	576.38	600.35	105.54	0.0003	8.3E-08	0.000322	10266	11137.73	10693	4.2143
1995 Sep 13	5.6846	18.50	6.75	101.34	576.08	600.65	105.66	0.0003	1.14E-07	0.000322	10269.8	11164.77	10708	4.3233
1995 Sep 14	5.6844	18.50	6.75	101.36	576.18	600.96	105.72	0.0003	5.72E-09	0.000322	10273.6	11176.88	10713.7	4.3618
1995 Sep 15	5.6934	18.50	6.75	101.38	577.18	601.26	105.61	0.0003	-2.57E-07	0.000322	10277.4	11152.87	10706.2	4.2295
1995 Sep 18	5.6927	18.50	6.75	101.43	577.43	602.18	105.78	0.0003	2E-08	0.000322	10288.8	11189.56	10739.8	4.3468
1995 Sep 19	5.6847	18.50	6.75	101.45	576.73	602.48	105.98	0.0003	2.29E-07	0.000322	10292.6	11232.46	10752.3	4.5306
1995 Sep 20	5.6829	18.50	6.75	101.47	576.65	602.79	106.07	0.0003	5.15E-08	0.000322	10296.5	11250.97	10763.1	4.5992
1995 Sep 21	5.7337	18.50	6.75	101.49	581.91	603.09	105.18	0.0003	-1.45E-06	0.000323	10300.3	11063.69	10675.2	3.6939
1995 Sep 22	5.7648	18.50	6.75	101.51	585.18	603.40	104.67	0.0003	-8.9E-07	0.000323	10304.1	10955.74	10624.9	3.1807
1995 Sep 26	5.7329	18.50	6.75	101.58	582.37	604.62	105.47	0.0003	9.12E-07	0.000321	10319.3	11122.97	10713.6	3.8814
1995 Sep 27	5.7187	18.50	6.75	101.60	581.04	604.93	105.78	0.0003	4.06E-07	0.000321	10323.1	11189.61	10747.6	4.1781
1995 Sep 28	5.7499	18.50	6.75	101.62	584.31	605.24	105.26	0.0003	-8.92E-07	0.000323	10327	11079.73	10668.7	3.6387
1995 Sep 29	5.7772	18.50	6.75	101.64	587.20	605.54	104.62	0.0003	-7.81E-07	0.000323	10330.8	10986.39	10653.5	3.1756
1995 Oct 02	5.7668	18.50	6.75	101.70	586.47	606.46	105.19	0.0003	2.97E-07	0.000322	10342.2	11059.61	10694.9	3.4679
1995 Oct 03	5.8255	18.50	6.75	101.72	592.54	606.77	104.16	0.0003	-1.88E-06	0.000324	10346.1	10848.84	10594.5	2.4421
1995 Oct 04	5.7909	18.50	6.75	101.73	589.13	607.08	104.83	0.0003	9.89E-07	0.000321	10349.9	10990	10685.1	3.0988
1995 Oct 05	5.8146	18.50	6.75	101.75	591.85	607.39	104.46	0.0003	-6.78E-07	0.000323	10353.7	10911.65	10629	2.7056
1995 Oct 06	5.8083	18.50	6.75	101.77	591.12	607.69	104.63	0.0003	1.8E-07	0.000322	10357.6	10946.42	10647.9	2.8531
1995 Oct 09	5.7895	18.50	6.75	101.83	589.54	608.62	105.12	0.0003						

1995 Dec 04	5.6185	18.50	6.75	102.89	578.08	626.13	111.44	0.0003	-2.14E-07	0.000322	10586	12419.12	11466	8.5527
1995 Dec 05	5.6188	18.50	6.75	102.91	578.22	626.45	111.49	0.0003	-8.56E-09	0.000322	10589.9	12430.39	11473.3	8.5843
1995 Dec 06	5.6604	18.50	6.75	102.93	582.60	626.77	110.73	0.0003	-1.19E-06	0.000323	10593.8	12260.77	11396.9	7.8019
1995 Dec 07	5.6525	18.50	6.75	102.95	581.90	627.08	110.94	0.0003	2.25E-07	0.000322	10597.8	12307.53	11420.7	7.9939
1995 Dec 08	5.6155	18.50	6.75	102.96	578.20	627.40	111.73	0.0003	1.06E-06	0.000321	10601.7	12482.9	11503.9	8.7624
1995 Dec 11	5.6215	18.50	6.75	103.02	579.14	628.36	111.78	0.0003	-1.71E-07	0.000322	10613.5	12494.17	11515.5	8.7557
1995 Dec 12	5.6285	18.50	6.75	103.04	579.96	628.67	111.69	0.0003	-2E-07	0.000322	10617.4	12475.75	11509.1	8.8542
1995 Dec 13	5.6095	18.50	6.50	103.06	578.11	628.99	112.13	0.0003	5.42E-07	0.000328	10621.3	12573.14	11556.1	9.0703
1995 Dec 14	5.6341	18.50	6.50	103.08	580.75	629.31	111.70	0.0003	-7.02E-07	0.000329	10625.1	12476.23	11513.5	8.6189
1995 Dec 15	5.6462	18.50	6.50	103.10	582.10	629.63	111.51	0.0003	-3.45E-07	0.000329	10628.9	12435.4	11496.7	8.4177
1995 Dec 18	5.6428	18.50	6.50	103.15	582.06	630.59	111.75	0.0003	9.7E-08	0.000329	10640.2	12488.29	11527.3	8.5995
1995 Dec 19	5.6436	18.50	6.50	103.17	582.25	630.91	111.79	0.0003	-2.28E-08	0.000329	10644	12497.41	11533.5	8.6219
1995 Dec 20	5.6456	18.50	6.50	103.19	582.56	631.23	111.81	0.0003	-5.71E-08	0.000329	10647.8	12501.22	11537.4	8.6206
1995 Dec 21	5.6342	18.50	6.50	103.21	581.49	631.55	112.09	0.0003	3.25E-07	0.000328	10651.6	12564.58	11568.6	8.8852
1995 Dec 22	5.6438	18.50	6.50	103.23	582.58	631.87	111.96	0.0003	-2.74E-07	0.000329	10655.4	12534.57	11556.9	8.7329
1995 Dec 27	5.8865	18.50	6.50	103.32	587.51	633.47	111.40	0.0003	-1.22E-08	0.00033	10674.4	12409.69	11509.4	8.0819
1995 Dec 28	5.6991	18.50	6.50	103.34	588.92	633.79	111.21	0.0003	-3.59E-07	0.000329	10678.2	12367.41	11491.8	7.8735
1995 Dec 29	5.6482	18.50	6.50	103.35	583.76	634.11	112.27	0.0003	1.45E-06	0.000327	10682	12604.08	11603.3	8.9142
1996 Jan 02	5.6369	18.50	6.50	103.43	583.01	635.40	112.72	0.0003	3.22E-07	0.000328	10697.2	12708.03	11658.4	9.2937
1996 Jan 03	5.6524	18.50	6.50	103.45	584.72	635.72	112.47	0.0003	-4.42E-07	0.000329	10701	12649.26	11634.4	9.0231
1996 Jan 04	5.6306	18.50	6.50	103.46	582.57	636.04	112.96	0.0003	6.22E-07	0.000328	10704.8	12760.32	11687.5	9.4974
1996 Jan 05	5.6231	18.50	6.50	103.48	581.39	636.36	113.17	0.0003	2.14E-07	0.000328	10708.7	12807.35	11711.1	9.987
1996 Jan 08	5.6261	18.50	6.50	103.54	582.51	637.33	113.28	0.0003	-8.55E-08	0.000329	10720.1	12832.63	11728.9	9.7433
1996 Jan 09	5.6329	18.50	6.50	103.56	583.32	637.65	113.20	0.0003	-1.94E-07	0.000329	10723.9	12814.65	11722.8	9.6455
1996 Jan 10	5.6109	18.50	6.50	103.57	581.15	637.98	113.70	0.0003	6.27E-07	0.000328	10727.7	12928.43	11778.8	10.128
1996 Jan 11	5.5929	18.50	6.50	103.59	579.39	638.30	114.13	0.0003	5.13E-07	0.000328	10731.6	13024.98	11822.8	10.534
1996 Jan 12	5.8017	18.50	6.50	103.61	580.40	638.62	114.01	0.0003	-2.51E-07	0.000329	10735.4	12997.25	11812.3	10.394
1996 Jan 15	5.6198	18.50	6.50	103.67	582.59	639.60	113.81	0.0003	-5.16E-07	0.000329	10746.9	12952.97	11798.5	10.144
1996 Jan 16	5.6156	18.50	6.50	103.69	582.28	639.92	113.95	0.0003	1.2E-07	0.000329	10750.7	12985.5	11815.4	10.288
1996 Jan 17	5.5938	18.50	6.50	103.70	580.10	640.24	114.46	0.0003	6.21E-07	0.000328	10754.5	13100.18	11869.5	10.752
1996 Jan 18	5.5484	18.50	6.25	103.72	575.49	640.57	115.45	0.0003	1.29E-06	0.000334	10758.3	13328.95	11974.9	11.729
1996 Jan 19	5.5079	18.50	6.25	103.74	571.39	640.89	116.36	0.0003	1.15E-06	0.000334	10762	13539.4	12071.1	12.619
1996 Jan 22	5.5123	18.50	6.25	103.79	572.14	641.87	116.44	0.0003	-1.25E-07	0.000336	10773.1	13558.93	12086	12.649
1996 Jan 23	5.5141	18.50	6.25	103.81	572.43	642.19	116.46	0.0003	-5.13E-08	0.000336	10776.8	13563.82	12090.3	12.653
1996 Jan 24	5.5156	18.50	6.25	103.83	572.68	642.52	116.49	0.0003	-4.28E-08	0.000336	10780.5	13570.19	12095.2	12.662
1996 Jan 25	5.5256	18.50	6.25	103.85	573.82	642.84	116.34	0.0003	-2.85E-07	0.000336	10784.2	13534.83	12081.5	12.492
1996 Jan 26	5.4919	18.50	6.25	103.86	570.41	643.17	117.11	0.0003	9.6E-07	0.000335	10787.9	13715.34	12163.8	13.248
1996 Jan 29	5.4997	18.50	6.25	103.92	571.52	644.15	117.12	0.0003	-2.22E-07	0.000336	10789.9	13718.08	12171.3	13.206
1996 Jan 30	5.5017	18.50	6.25	103.94	571.82	644.47	117.14	0.0003	-5.7E-08	0.000336	10802.6	13722.01	12175.1	13.205
1996 Jan 31	5.5029	18.50	6.25	103.95	572.05	644.80	117.17	0.0003	-3.42E-08	0.000336	10806.3	13729.94	12180.7	13.221
1996 Feb 01	5.5289	18.50	6.25	103.97	574.85	645.13	116.68	0.0003	-7.41E-07	0.000336	10810	13814.9	12131.7	12.712
1996 Feb 02	5.5439	18.50	6.25	103.99	576.51	645.46	116.43	0.0003	-4.27E-07	0.000336	10813.7	13555.05	12107.1	12.437
1996 Feb 05	5.5803	18.50	6.25	104.04	580.59	646.46	115.84	0.0003	-1.04E-06	0.000337	10824.9	13419.51	12052.6	11.8
1996 Feb 06	5.603	18.50	6.25	104.06	583.05	646.76	115.43	0.0003	-6.47E-07	0.000336	10828.6	13324.49	12011.9	11.371
1996 Feb 07	5.6052	18.50	6.25	104.08	583.38	647.09	115.44	0.0003	-6.27E-08	0.000338	10832.3	13327.53	12015.3	11.367
1996 Feb 08	5.5909	18.50	6.25	104.10	581.99	647.42	115.80	0.0003	4.07E-07	0.000335	10836	13409.38	12054.2	11.703
1996 Feb 09	5.592	18.50	6.25	104.11	582.20	647.75	115.83	0.0003	-3.13E-08	0.000338	10839.7	13417.7	12060	11.721
1996 Feb 12	5.5807	18.50	6.25	104.17	581.33	648.73	116.25	0.0003	3.22E-07	0.000335	10850.8	13513.09	12109	12.078
1996 Feb 13	5.578	18.50	6.25	104.19	581.14	649.06	116.36	0.0003	7.69E-08	0.000335	10854.5	13539.89	12123.1	12.176
1996 Feb 14	5.602	18.50	6.25	104.20	583.75	649.39	115.92	0.0003	-6.84E-07	0.000336	10858.3	13437.73	12079.3	11.718
1996 Feb 15	5.6227	18.50	6.25	104.22	586.00	649.72	115.55	0.0003	-5.9E-07	0.000336	10862	13552.5	12043	11.332
1996 Feb 16	5.6924	18.50	6.25	104.24	593.37	650.05	114.20	0.0003	-1.99E-06	0.000338	10865.7	13040.72	11903.6	9.9573
1996 Feb 19	5.9077	18.50	6.25	104.29	616.13	651.04	110.20	0.0003	-6.13E-06	0.000342	10876.9	12144.38	11493.2	5.9093
1996 Feb 20	5.9675	18.50	6.25	104.31	622.47	651.37	109.15	0.0003	-1.7E-06	0.000337	10880.6	11914.27	11385.7	4.8424
1996 Feb 21	6.1407	18.50	6.25	104.33	640.85	651.70	108.13	0.0003	-4.93E-06	0.00034	10884.3	11263.07	11072.1	1.7997
1996 Feb 22	6.0656	18.50	6.25	104.35	632.92	652.03	107.50	0.0003	2.14E-06	0.000333	10888	11555.4	11216.8	3.1503
1996 Feb 23	5.9491	18.50	6.25	104.36	620.87	652.36	109.68	0.0003	3.32E-06	0.000332	10891.8	12024.59	11444.2	5.293
1996 Feb 26	5.9475	18.50	6.25	104.42	621.02	653.35	109.85	0.0003	4.56E-08	0.000336	10903	12067.68	11470.5	5.4357
1996 Feb 27	5.8979	18.50	6.25	104.44	615.95	653.68	110.63	0.0003	1.41E-06	0.000334	10906.7	12283.94	11574.9	6.3978
1996 Feb 28	5.885	18.50	6.25	104.45	612.62	654.01	111.51	0.0003	9.37E-07	0.000335	10910.4	12434.74	11647.7	7.0581
1996 Feb 29	5.8915	18.50	6.25	104.47	615.49	654.34	111.07	0.0003	-7.54E-07	0.000336	10914.2	12335.62	11603.2	6.5949
1996 Mar 01	5.9564	18.50	6.25	104.49	622.38	654.88	109.91	0.0003	-1.85E-06	0.000337	10917.9	12080.51	11484.5	5.4226
1996 Mar 04	5.9853	18.50	6.25	104.54	623.63	655.67	109.91	0.0003	-2.53E-07	0.000336	10929.1	12081.15	11490.7	5.3718
1996 Mar 05	5.9121	18.50	6.25	104.56	618.17	656.00	110.96	0.0003	1.51E-06	0.000334	10932.9	12312.02	11602	6.3991
1996 Mar 06	5.9264	18.50	6.25	104.58	619.77	656.34	110.75	0.0003	-4.07E-07	0.000336	10936.6	12265.1	11581.8	6.1696
1996 Mar 07	5.9212	18.50	6.25	104.60	619.34	656.67	110.90	0.0003	1.48E-07	0.000335	10940.4	12299.11	11599.9	6.3051
1996 Mar 08	6.0142	18.50	6.00	104.61	629.17	657.00	109.24	0.0003	-2.65E-06	0.000345	10944.1	11933.77	11423.2	4.6277
1996 Mar 11	6.0059	18.50	6.00	104.67	628.61	658.00	109.56	0.0003	2.36E-07	0.000342	10954.9	12003.19	11467.1	4.8934
1996 Mar 12	5.9694	18.50	6.00	104.68	624.89	658.33	110.28	0.0003	1.04E-06	0.000341	10958.5	12162.75	11544.9	5.6019
1996 Mar 13	6.0016	18.50	6.00	104.70	628.37	658.67	109.75	0.0003	-9.16E-07	0.000343	10962.1	12044.79	11490.7	5.0486
1996 Mar 14	5.9848	18.50	6.00	104.72	624.62	659.00	110.48	0.0003						

1996 May 16	6.552	19.50	6.00	105.81	693.25	680.75	103.90	0.0004	-3.98E-08	0.00037	11195.2	10794.97	10993.3	-1.908
1996 May 17	6.5737	19.50	6.00	105.82	695.66	681.11	103.61	0.0004	-6.16E-07	0.00037	11198.9	10735.28	10984.6	-2.213
1996 May 20	6.5434	20.50	6.00	105.88	692.79	682.26	104.27	0.0004	8.81E-07	0.000398	11209.9	10871.47	11039.4	-1.61
1996 May 21	6.5536	20.50	6.00	105.89	693.99	682.64	104.16	0.0004	-2.9E-07	0.000397	11213.6	10849.84	11030.2	-1.732
1996 May 22	6.5612	20.50	6.00	105.91	694.91	683.02	104.10	0.0004	-2.16E-07	0.000397	11217.3	10836.88	11025.4	-1.811
1996 May 23	6.5945	20.50	6.00	105.93	698.55	683.41	103.63	0.0004	-9.46E-07	0.000398	11221	10739.76	10977.7	-2.296
1996 May 24	6.5946	20.50	6.00	105.95	698.67	683.79	103.69	0.0004	-2.84E-09	0.000397	11224.7	10751.51	10985.5	-2.257
1996 May 27	6.6058	20.50	6.00	106.00	700.21	684.94	103.69	0.0004	-3.18E-07	0.000398	11235.7	10751.22	10990.8	-2.311
1996 May 28	6.6425	20.50	6.00	106.02	704.21	685.33	103.17	0.0004	-1.04E-06	0.000398	11239.4	10844.89	10938	-2.843
1996 May 29	6.661	20.50	6.00	106.03	706.29	685.71	102.94	0.0004	-5.25E-07	0.000398	11243.1	10597.54	10915.6	-3.089
1996 May 30	6.6994	20.50	6.00	106.05	710.48	686.10	102.41	0.0004	-1.09E-06	0.000398	11246.8	10488.17	10860.9	-3.639
1996 May 31	6.7102	20.50	6.00	106.07	711.74	686.48	102.30	0.0004	-3.07E-07	0.000398	11250.5	10466.18	10851.3	-3.764
1996 Jun 03	6.7438	20.50	6.00	106.12	715.66	687.64	101.97	0.0004	-9.54E-07	0.000398	11261.6	10397.1	10820.7	-4.155
1996 Jun 04	6.7642	20.50	6.00	106.14	717.94	688.03	101.72	0.0004	-5.79E-07	0.000398	11265.3	10346.09	10795.9	-4.422
1996 Jun 05	6.7877	20.50	6.00	106.16	720.55	688.41	101.42	0.0004	-6.67E-07	0.000398	11269	10286.12	10766.4	-4.735
1996 Jun 06	6.7593	20.50	5.75	106.17	717.66	688.80	101.90	0.0004	8.08E-07	0.000403	11272.7	10384.4	10819.4	-4.269
1996 Jun 07	6.7239	20.50	5.75	106.19	714.01	689.19	102.50	0.0004	1.01E-06	0.000403	11276.3	10505.82	10884.2	-3.692
1996 Jun 10	6.7162	20.50	5.75	106.24	713.53	690.35	102.79	0.0004	2.19E-07	0.000404	11286.9	10565.44	10920.2	-3.452
1996 Jun 11	6.6767	20.50	5.75	106.26	709.44	690.73	103.45	0.0004	1.12E-06	0.000403	11290.5	10702.83	10992.7	-2.802
1996 Jun 12	6.6855	20.50	5.75	106.27	710.49	691.12	103.38	0.0004	-2.5E-07	0.000404	11294.1	10886.67	10986.2	-2.897
1996 Jun 13	6.61	20.50	5.75	106.29	702.58	691.51	104.62	0.0004	2.14E-06	0.000402	11297.6	10944.47	11119.6	-1.674
1996 Jun 14	6.6517	20.50	5.75	106.31	707.12	691.90	104.02	0.0004	-1.18E-06	0.000405	11301.2	10819.82	11057.9	-2.289
1996 Jun 18	6.7131	20.50	5.75	106.37	714.10	693.45	103.30	0.0004	-1.74E-06	0.000406	11315.4	10670.59	10988.3	-3.075
1996 Jun 19	6.712	20.50	5.75	106.39	714.09	693.84	103.37	0.0004	3.12E-06	0.000404	11319	10686.08	10993	-3.017
1996 Jun 20	6.7226	20.50	5.75	106.41	715.33	694.23	103.27	0.0004	-3.01E-07	0.000404	11322.5	10664.38	10988.5	-3.139
1996 Jun 21	6.7119	20.50	5.75	106.42	714.31	694.62	103.49	0.0004	3.04E-07	0.000404	11326.1	10710.43	11014	-2.933
1996 Jun 24	6.702	20.50	5.75	106.47	713.59	695.79	103.82	0.0004	2.81E-07	0.000404	11336.8	10778.32	11054	-2.656
1996 Jun 25	6.7086	20.50	5.75	106.49	714.41	696.18	103.77	0.0004	-1.87E-07	0.000404	11340.4	10769.21	11051.1	-2.716
1996 Jun 26	6.7129	20.50	5.75	106.51	714.98	696.57	103.77	0.0004	-1.22E-07	0.000404	11344	10767.5	11052	-2.741
1996 Jun 27	6.6724	20.50	5.75	106.52	710.78	696.97	104.46	0.0004	1.15E-06	0.000403	11347.5	10910.86	11127.1	-2.07
1996 Jun 28	6.7055	20.50	5.75	106.54	714.41	697.36	104.00	0.0004	-9.39E-07	0.000405	11351.1	10815.55	11080.1	-2.544
1996 Jul 01	6.7342	19.50	5.75	106.59	717.81	698.48	103.72	0.0004	-8.14E-07	0.000377	11361.9	10757.96	11055.8	-2.871
1996 Jul 02	6.7424	19.50	5.75	106.61	718.80	698.85	103.65	0.0004	-2.33E-07	0.000377	11365.4	10743.27	11050	-2.959
1996 Jul 03	6.7497	19.50	5.75	106.63	719.69	699.22	103.59	0.0004	-2.07E-07	0.000377	11369	10731.51	11045.7	-3.033
1996 Jul 04	6.7626	19.50	5.75	106.64	721.18	699.60	103.45	0.0004	-3.66E-07	0.000377	11372.6	10702.03	11032.2	-3.192
1996 Jul 05	6.7644	19.50	5.75	106.66	721.49	699.97	103.48	0.0004	-5.11E-08	0.000377	11378.2	10707.77	11036.9	-3.181
1996 Jul 08	6.7444	19.50	5.75	106.71	719.69	701.09	103.95	0.0004	5.67E-07	0.000376	11386.9	10805.92	11092.6	-2.758
1996 Jul 09	6.7391	19.50	5.75	106.73	719.24	701.47	104.09	0.0004	1.5E-07	0.000377	11390.5	10834.49	11109	-2.838
1996 Jul 10	6.7144	19.50	5.75	106.74	716.72	701.84	104.53	0.0004	7.01E-07	0.000376	11394.1	10926.02	11157.6	-2.216
1996 Jul 11	6.7389	19.50	5.75	106.76	719.45	702.22	104.20	0.0004	-6.95E-07	0.000377	11397.7	10858.31	11124.7	-2.557
1996 Jul 12	6.7934	19.50	5.75	106.78	725.38	702.59	103.42	0.0004	-1.55E-06	0.000378	11401.3	10896.21	11043.1	-3.354
1996 Jul 15	6.8753	19.50	5.75	106.83	734.47	703.72	102.35	0.0004	-2.32E-06	0.000379	11412.1	10476.39	10934.2	-4.473
1996 Jul 16	6.9083	19.50	5.75	106.84	737.90	704.09	101.95	0.0004	-8.79E-07	0.000378	11415.7	10393.85	10892.7	-4.895
1996 Jul 17	6.836	19.50	5.75	106.86	730.50	704.47	103.05	0.0004	1.99E-06	0.000375	11419.3	10619.86	11012.3	-3.808
1996 Jul 18	6.7719	19.50	5.75	106.88	723.77	704.84	104.08	0.0004	1.82E-06	0.000375	11422.9	10833.43	11124.2	-2.794
1996 Jul 19	6.7791	19.50	5.75	106.89	724.65	705.22	104.03	0.0004	-2.04E-07	0.000377	11428.5	10821.98	11120.1	-2.866
1996 Jul 22	6.7942	19.50	5.75	106.95	726.81	706.35	103.98	0.0004	-4.28E-07	0.000377	11437.3	10808.49	11118.4	-2.981
1996 Jul 23	6.852	19.50	5.75	106.96	732.90	706.73	103.14	0.0004	-1.64E-06	0.000378	11440.9	10638.27	11032.3	-3.82
1996 Jul 24	6.8611	19.50	5.75	106.98	733.99	707.11	103.06	0.0004	-2.58E-07	0.000377	11444.5	10621.41	11025.3	-3.919
1996 Jul 25	6.8824	19.50	5.75	107.00	736.39	707.48	102.80	0.0004	-6.04E-07	0.000377	11448.1	10567.05	10998.7	-4.2
1996 Jul 26	6.9316	19.50	5.75	107.01	741.77	707.86	102.12	0.0004	-1.39E-06	0.000378	11451.7	10428.71	10928.2	-4.892
1996 Jul 29	6.9347	19.50	5.75	107.06	742.45	709.00	102.24	0.0004	-8.79E-08	0.000377	11462.5	10452.81	10946	-4.824
1996 Jul 30	6.9518	19.50	5.75	107.08	744.40	709.38	102.04	0.0004	-4.85E-07	0.000377	11466.1	10412.57	10926.7	-5.038
1996 Jul 31	6.9674	19.50	5.75	107.10	746.19	709.75	101.87	0.0004	-4.42E-07	0.000377	11469.7	10377.07	10909.7	-5.229
1996 Aug 01	7.0421	19.50	5.75	107.11	754.31	710.13	100.84	0.0004	-2.12E-06	0.000379	11473.4	10168.94	10801.5	-6.273
1996 Aug 02	6.9348	19.50	5.75	107.13	742.93	710.51	102.48	0.0004	3.04E-06	0.000374	11477	10497.27	10976.2	-4.674
1996 Aug 05	6.9036	19.50	5.75	107.18	739.94	711.65	103.08	0.0004	8.84E-07	0.000376	11487.8	10626.35	11048.7	-4.097
1996 Aug 06	6.8923	19.50	5.75	107.20	738.84	712.03	103.31	0.0004	3.2E-07	0.000376	11491.4	10672.61	11074.5	-3.89
1996 Aug 07	6.9282	19.50	5.75	107.22	742.81	712.41	102.83	0.0004	-1.02E-06	0.000378	11495.1	10573.58	11024.7	-4.387
1996 Aug 08	6.9639	19.50	5.75	107.23	746.75	712.79	102.36	0.0004	-1.01E-06	0.000378	11498.7	10478.84	10975.8	-4.876
1996 Aug 12	7.0106	19.50	5.75	107.30	752.23	714.32	101.89	0.0004	-1.32E-06	0.000378	11513.2	10381.75	10932.8	-5.406
1996 Aug 13	7.0317	19.50	5.75	107.32	754.62	714.70	101.84	0.0004	-5.98E-07	0.000377	11516.8	10330.57	10907.6	-5.677
1996 Aug 14	7.0455	19.50	5.75	107.33	756.22	715.08	101.49	0.0004	-3.91E-07	0.000377	11520.4	10301.14	10893.7	-5.839
1996 Aug 15	7.042	19.50	5.75	107.35	755.96	715.46	101.60	0.0004	9.92E-08	0.000377	11524.1	10322.4	10962.7	-5.751
1996 Aug 16	7.0553	19.50	5.75	107.37	757.51	715.84	101.46	0.0004	-3.77E-07	0.000377	11527.7	10294.51	10937.7	-5.905
1996 Aug 19	7.035	19.50	5.75	107.42	756.68	716.99	101.92	0.0004	5.75E-07	0.000376	11538.6	10387.23	10947.8	-5.5
1996 Aug 20	7.0557	19.50	5.75	107.43	758.03	717.37	101.67	0.0004	-5.86E-07	0.000377	11542.2	10337.4	10923.2	-5.762
1996 Aug 21	7.0506	19.50	5.75	107.45	757.60	717.76	101.80	0.0004	1.44E-07	0.000377	11545.9	10363.43	10938.7	-5.651
1996 Aug 22	7.0687	19.50	5.75	107.47	759.66	718.14	101.59	0.0004	-5.13E-07	0.000377	11549.5	10321.44	10918.2	-5.874
1996 Aug 23	7.034	19.50	5.75	107.49	758.05	718.52	102.15	0.0004	9.83E-07	0.000376	11553.1	10434.67	10979.7	-5.335
1996 Aug 26	7.0656	19.50	5.75	107.54	759.81	719.88	101.86	0.0						

1996 Oct 23	7.3016	19.25	5.75	108.52	792.39	742.20	101.65	0.0004	-1.16E-07	0.00037	11777.3	10332.43	11031.2	-6.875
1996 Oct 24	7.3121	19.25	5.75	108.54	793.66	742.59	101.56	0.0004	-2.97E-07	0.00037	11781	10313.65	11022.9	-6.984
1996 Oct 25	7.3129	19.25	5.75	108.56	793.87	742.98	101.60	0.0004	-2.26E-08	0.00037	11784.7	10322.27	11029.3	-6.959
1996 Oct 28	7.4654	19.25	5.75	108.61	810.81	744.16	99.68	0.0004	-4.31E-06	0.000374	11795.9	9936.231	10326.2	-8.928
1996 Oct 29	7.5598	19.25	5.75	108.63	821.19	744.55	98.49	0.0004	-2.67E-06	0.000372	11799.6	9699.854	10698.3	-10.14
1996 Oct 30	7.584	19.25	5.75	108.64	823.95	744.94	98.23	0.0004	-6.84E-07	0.00037	11803.3	9648.219	10671.5	-10.42
1996 Oct 31	7.7156	19.25	6.00	108.66	838.38	745.33	96.60	0.0004	-3.72E-08	0.000367	11807	9331.734	10496.7	-12.06
1996 Nov 01	7.6603	19.25	6.00	108.68	832.51	745.73	97.35	0.0004	1.56E-06	0.000361	11810.9	9475.941	10579.8	-11.33
1996 Nov 04	7.6919	19.25	6.00	108.73	836.35	746.91	97.10	0.0004	-8.93E-07	0.000364	11822.5	9429.001	10556.2	-11.63
1996 Nov 05	7.7808	19.25	6.00	108.75	846.16	747.30	96.04	0.0004	-2.51E-06	0.000365	11826.4	9224.491	10444.8	-12.71
1996 Nov 06	7.7568	19.25	6.00	108.77	843.69	747.69	96.39	0.0004	6.78E-07	0.000362	11830.3	9291.454	10484.3	-12.38
1996 Nov 07	7.7431	19.25	6.00	108.79	842.33	748.09	96.61	0.0004	3.87E-07	0.000363	11834.2	9334.2	10510.1	-12.17
1996 Nov 08	7.757	19.25	6.00	108.80	843.99	748.48	96.49	0.0004	-3.93E-07	0.000363	11838.1	9310.59	10498.6	-12.31
1996 Nov 11	7.7996	19.25	6.00	108.86	849.04	749.67	96.12	0.0004	-1.2E-08	0.000364	11849.8	9238.327	10462.9	-12.74
1996 Nov 12	7.7804	19.25	6.00	108.87	847.09	750.06	96.40	0.0004	5.43E-07	0.000362	11853.7	9293.774	10496	-12.47
1996 Nov 13	7.6536	19.25	6.00	108.89	833.42	750.46	98.05	0.0004	3.58E-06	0.000359	11857.6	9614.405	10677.2	-10.84
1996 Nov 14	7.7437	19.25	6.00	108.91	843.37	750.85	96.98	0.0004	-2.55E-06	0.000366	11861.5	9401.884	10560.3	-11.95
1996 Nov 15	7.7892	19.25	6.00	108.93	848.46	751.25	98.45	0.0004	-1.29E-06	0.000364	11865.4	9302.168	10505.9	-12.48
1996 Nov 18	7.7735	19.25	6.00	108.98	847.17	752.44	96.80	0.0004	4.44E-07	0.000363	11877.1	9369.359	10549	-12.19
1996 Nov 19	7.77	19.25	6.00	109.00	848.93	752.84	96.89	0.0004	9.89E-08	0.000363	11881	9387.698	10561	-12.11
1996 Nov 20	7.8105	19.25	6.00	109.02	851.48	753.23	96.44	0.0004	-1.14E-06	0.000364	11884.9	9300.394	10513.5	-12.58
1996 Nov 21	7.8055	20.25	6.00	109.04	851.08	753.65	96.55	0.0004	1.41E-07	0.00039	11888.8	9322.648	10527.8	-12.48
1996 Nov 22	7.7753	20.25	6.00	109.05	847.93	754.07	96.98	0.0004	8.53E-07	0.000389	11892.7	9405.637	10576.3	-12.07
1996 Nov 25	7.7381	20.25	6.00	109.11	844.28	755.32	97.61	0.0004	1.05E-06	0.000389	11904.4	9527.924	10650.1	-11.5
1996 Nov 26	7.6998	20.25	6.00	109.13	840.24	755.74	98.15	0.0004	1.08E-08	0.000389	11908.4	9635.627	10710.8	-10.97
1996 Nov 27	7.6693	20.25	6.00	109.14	837.05	756.16	98.60	0.0004	8.62E-07	0.000389	11912.3	9721.181	10761.1	-10.55
1996 Nov 28	7.6527	20.25	6.00	109.16	835.38	756.58	98.86	0.0004	4.69E-07	0.00039	11916.2	9774.237	10792.2	-10.3
1996 Nov 29	7.7175	20.25	6.00	109.18	842.59	757.00	98.09	0.0004	-1.83E-06	0.000392	11920.1	9621.454	10709.3	-11.09
1996 Dec 02	7.7912	20.25	6.00	109.23	851.06	758.26	97.32	0.0004	-2.08E-06	0.000392	11931.9	9471.74	10630.9	-11.91
1996 Dec 03	7.7837	20.25	6.00	109.25	850.38	758.68	97.47	0.0004	2.12E-07	0.00039	11935.8	9500.534	10648.8	-11.78
1996 Dec 04	7.6451	20.25	6.00	109.27	835.37	759.10	99.29	0.0004	3.92E-06	0.000386	11939.7	9859.063	10849.6	-9.978
1996 Dec 05	7.6821	20.25	6.00	109.29	839.55	759.52	98.87	0.0004	-1.05E-06	0.000391	11943.6	9775.159	10805.1	-10.42
1996 Dec 06	7.6672	20.25	6.00	109.30	838.06	759.95	99.12	0.0004	4.21E-07	0.00039	11947.6	9824.08	10833.9	-10.19
1996 Dec 09	7.6971	20.25	6.00	109.36	841.75	761.21	96.90	0.0004	-8.45E-07	0.000391	11959.4	9780.379	10815.1	-10.46
1996 Dec 10	7.7416	20.25	6.00	109.38	846.75	761.63	98.38	0.0004	-1.28E-08	0.000392	11963.3	9678.994	10760.7	-10.99
1996 Dec 11	7.7442	20.25	6.00	109.39	847.18	762.06	98.40	0.0004	-7.34E-08	0.00039	11967.2	9683.232	10764.8	-10.99
1996 Dec 12	7.724	20.25	6.00	109.41	845.10	762.48	98.72	0.0004	5.74E-07	0.00039	11971.2	9744.749	10800.7	-10.7
1996 Dec 13	7.8399	20.25	6.00	109.43	857.93	762.90	97.31	0.0004	-3.27E-06	0.000394	11975.1	9469.257	10648.7	-12.12
1996 Dec 17	7.87	20.25	6.00	109.50	861.79	764.59	97.15	0.0004	-8.5E-07	0.000391	11980.3	9438.716	10638.5	-12.35
1996 Dec 18	7.8946	20.25	6.00	109.52	864.62	765.02	96.90	0.0004	-6.95E-07	0.000391	11994.8	9390.395	10613	-12.62
1996 Dec 19	7.8513	20.25	6.00	109.54	860.02	765.44	97.49	0.0004	1.22E-06	0.000389	11998.7	9504.795	10679.2	-12.05
1996 Dec 20	7.789	20.25	6.00	109.56	853.34	765.87	98.33	0.0004	1.76E-06	0.000389	12002.7	9668.169	10772.4	-11.23
1996 Dec 23	7.8233	20.25	6.00	109.61	857.52	767.14	98.06	0.0004	-9.68E-07	0.000391	12014.5	9815.506	10748.3	-11.55
1996 Dec 24	7.8593	20.25	6.00	109.63	861.61	767.57	97.66	0.0004	-1.02E-06	0.000391	12018.5	9538.194	10708.7	-11.97
1996 Dec 27	7.8468	20.25	6.00	109.68	860.68	768.85	97.98	0.0004	3.53E-07	0.00039	12030.3	9600.485	10747	-11.7
1996 Dec 30	7.8986	20.25	6.00	109.74	866.55	770.13	97.53	0.0004	-1.41E-06	0.000392	12042.2	9511.358	10702.2	-12.21
1996 Dec 31	7.9391	20.25	6.00	109.75	871.38	770.55	97.06	0.0004	-1.2E-06	0.000392	12046.2	9420.241	10652.6	-12.7
1997 Jan 02	8.0005	20.25	6.00	109.79	878.68	771.41	96.42	0.0004	-1.73E-06	0.000392	12054.1	9296.801	10586	-13.37
1997 Jan 03	7.9675	20.25	6.00	109.81	874.90	771.84	96.87	0.0004	9.31E-07	0.000389	12058	9384.376	10637.5	-12.94
1997 Jan 06	7.9925	20.25	6.00	109.86	878.08	773.12	96.73	0.0004	-7.08E-07	0.000391	12069.9	9356.83	10627.1	-13.13
1997 Jan 07	7.9242	20.25	6.00	109.88	870.72	773.55	97.62	0.0004	1.93E-06	0.000388	12073.9	9529.388	10726.5	-12.28
1997 Jan 08	7.9229	20.25	6.00	109.90	870.72	773.98	97.69	0.0004	3.67E-08	0.00039	12077.9	9543.093	10735.9	-12.21
1997 Jan 09	7.9363	20.25	6.00	109.92	872.34	774.41	97.58	0.0004	-3.78E-07	0.000391	12081.8	9521.451	10725.5	-12.34
1997 Jan 10	7.9034	20.25	6.00	109.94	868.86	774.84	98.04	0.0004	9.28E-07	0.000389	12085.8	9611.543	10777.9	-11.9
1997 Jan 13	7.8756	20.25	6.00	109.99	868.02	776.13	98.57	0.0004	8.41E-07	0.00039	12097.7	9716.7	10842.1	-11.42
1997 Jan 14	7.8107	20.25	6.00	110.01	859.24	776.56	99.42	0.0004	1.77E-06	0.000389	12101.7	9884.787	10837.2	-10.59
1997 Jan 15	7.7924	20.25	6.00	110.03	857.37	776.99	99.71	0.0004	5.16E-07	0.00039	12105.7	9942.292	10970.8	-10.31
1997 Jan 16	7.8059	20.25	6.00	110.04	858.99	777.42	99.59	0.0004	-3.81E-07	0.000391	12109.7	9918.929	10959.7	-10.45
1997 Jan 17	7.8147	20.25	6.00	110.06	860.10	777.85	99.54	0.0004	-2.48E-07	0.000391	12113.7	9907.587	10955.2	-10.53
1997 Jan 20	7.7279	20.25	6.00	110.12	850.97	779.15	100.82	0.0004	2.45E-06	0.000389	12125.6	10165.15	11102.2	-9.294
1997 Jan 21	7.7398	20.25	6.00	110.13	852.42	779.58	100.72	0.0004	-3.36E-07	0.000391	12129.6	10145.17	11093.1	-9.411
1997 Jan 22	7.6849	20.25	6.00	110.15	846.51	780.01	101.50	0.0004	1.55E-06	0.000389	12133.6	10302.06	11180.4	-8.653
1997 Jan 23	7.5226	20.25	6.00	110.17	828.77	780.44	103.75	0.0004	4.58E-06	0.000386	12137.6	10763.32	11429.8	-8.424
1997 Jan 24	7.5254	20.25	6.00	110.19	829.21	780.88	103.77	0.0004	-7.9E-08	0.00039	12141.6	10767.25	11433.8	-6.423
1997 Jan 27	7.4797	20.25	6.00	110.24	824.59	782.18	104.57	0.0004	1.29E-06	0.000389	12153.5	10955.54	11528.5	-5.67
1997 Jan 28	7.3793	20.25	6.00	110.26	813.65	782.61	106.05	0.0004	2.83E-06	0.000388	12157.5	11247.6	11693.7	-4.207
1997 Jan 29	7.3852	20.25	6.00	110.28	814.44	783.04	106.03	0.0004	-1.66E-07	0.000391	12161.5	11242.1	11692.8	-4.251
1997 Jan 30	7.4005	20.25	6.00	110.30	816.26	783.48	105.87	0.0004	-4.31E-07	0.000391	12165.5	11208.09	11677	-4.429
1997 Jan 31	7.3069	20.25	6.00	110.32	806.07	783.91	107.28	0.0004	2.64E-06	0.000388	12169.5	11509.84	11835.1	-3.032
1997 Feb 03	7.2583	20.25	6.00	110.37	801.10	785.22	108.18	0.0004	1.37E-06	0.000389	12181.5	11703.35	11940	-2.188
1997 Feb 04	7.3407	20.25	6.00	110.39	810.33	785.65	107.03	0.0004	-2.32E-06	0.000393	12185.5	11454.78	11814.5	-3.361
1997 Feb 05	7.3285	20.25	6.00	110.41										

1997 Apr 07	7.2085	20.25	6.00	111.52	803.88	813.13	112.80	0.0004	7.07E-07	0.00039	12436.4	12724.21	12579.5	1.2829
1997 Apr 08	7.1933	20.25	6.00	111.54	802.32	813.58	113.10	0.0004	4.28E-07	0.00039	12440.5	12792.22	12515.1	1.5856
1997 Apr 09	7.194	20.25	6.00	111.56	802.53	814.03	113.15	0.0004	-1.97E-08	0.00039	12444.6	12803.93	12523	1.599
1997 Apr 10	7.2153	20.25	6.00	111.57	805.04	814.48	112.88	0.0004	-6E-07	0.000391	12448.7	12742.57	12594.8	1.3092
1997 Apr 11	7.234	20.25	6.00	111.59	807.26	814.94	112.65	0.0004	-5.28E-07	0.000391	12452.8	12690.85	12571.3	1.0818
1997 Apr 14	7.2402	20.25	6.00	111.65	808.35	816.29	112.74	0.0004	-1.74E-07	0.000391	12485.1	12711.33	12587.6	1.0974
1997 Apr 15	7.2414	20.25	6.00	111.67	808.61	816.75	112.79	0.0004	-3.38E-08	0.00039	12469.2	12721.22	12594.6	1.1229
1997 Apr 16	7.245	20.25	6.00	111.68	809.15	817.20	112.79	0.0004	-1.01E-07	0.00039	12473.3	12722.69	12597.4	1.1111
1997 Apr 17	7.2585	20.25	6.00	111.70	810.79	817.66	112.65	0.0004	-3.8E-07	0.000391	12477.4	12689.47	12583	0.9454
1997 Apr 18	7.2699	20.25	6.00	111.72	812.20	818.11	112.53	0.0004	-3.21E-07	0.000391	12481.5	12663.75	12572.3	0.8128
1997 Apr 21	7.2614	20.25	6.00	111.78	811.65	819.47	112.85	0.0004	2.39E-07	0.00039	12493.8	12735.7	12614.2	1.0769
1997 Apr 22	7.2723	20.25	6.00	111.79	813.00	819.92	112.75	0.0004	-3.07E-07	0.000391	12497.9	12711.65	12604.3	0.9519
1997 Apr 23	7.259	20.25	6.00	111.81	811.65	820.38	113.02	0.0004	3.74E-07	0.00039	12502	12772.43	12636.5	1.2028
1997 Apr 24	7.2034	20.25	6.00	111.83	805.56	820.83	113.95	0.0004	1.56E-06	0.000389	12506.1	12984.76	12743.2	2.1199
1997 Apr 25	7.2179	20.25	6.00	111.85	807.32	821.29	113.73	0.0004	-4.08E-07	0.000391	12510.2	12946.99	12726.7	1.9357
1997 Apr 29	7.2231	20.25	6.00	111.92	808.43	823.11	113.96	0.0004	-1.46E-07	0.00039	12526.7	12985.8	12754.2	2.0326
1997 Apr 30	7.2508	20.25	6.00	111.94	811.66	823.57	113.58	0.0004	-7.79E-07	0.000391	12530.8	12901.08	12714.6	1.6418
1997 May 02	7.1674	20.25	6.00	111.98	802.59	824.48	115.03	0.0004	2.35E-06	0.000388	12539.1	13232.37	12981	3.0541
1997 May 05	7.2228	20.25	6.00	112.03	809.19	825.85	114.34	0.0004	-1.56E-06	0.000392	12551.4	13073.57	12809.8	2.3066
1997 May 06	7.2066	20.25	6.25	112.05	807.51	826.31	114.66	0.0004	4.56E-07	0.000383	12555.5	13146.99	12847.9	2.6088
1997 May 07	7.273	20.25	6.25	112.07	815.09	826.77	113.68	0.0004	-1.87E-06	0.000385	12559.8	12922.36	12739.3	1.8058
1997 May 08	7.2807	20.25	6.25	112.09	816.09	827.23	113.62	0.0004	-2.17E-07	0.000384	12564.2	12909.35	12735.6	1.5294
1997 May 09	7.2616	20.25	6.25	112.11	814.09	827.69	113.98	0.0004	5.37E-07	0.000383	12568.5	12991.76	12778.4	1.8723
1997 May 12	7.2213	20.25	6.25	112.17	809.99	829.06	114.81	0.0004	1.13E-06	0.000382	12581.4	13180.93	12877.7	2.6415
1997 May 13	7.2358	20.25	6.25	112.19	811.75	829.52	114.64	0.0004	-4.08E-07	0.000384	12585.7	13142.73	12861.2	2.4558
1997 May 14	7.3223	20.25	6.25	112.21	821.60	829.98	113.35	0.0004	-2.43E-06	0.000386	12590	12848.29	12718.5	1.1452
1997 May 15	7.3601	20.25	6.25	112.22	825.98	830.45	112.83	0.0004	-1.06E-06	0.000385	12594.3	12730.77	12662.4	0.6084
1997 May 16	7.3524	20.25	6.25	112.24	825.26	830.91	113.01	0.0004	2.17E-07	0.000383	12598.6	12771.61	12684.8	0.768
1997 May 19	7.3344	20.25	6.25	112.30	823.68	832.29	113.48	0.0004	5.06E-07	0.000383	12811.6	12877.14	12743.7	1.1763
1997 May 20	7.3473	20.25	6.25	112.32	825.25	832.75	113.34	0.0004	-3.63E-07	0.000384	12815.9	12846.2	12730.5	1.0206
1997 May 21	7.3949	20.25	6.25	112.34	830.74	833.21	112.67	0.0004	-1.34E-06	0.000385	12820.2	12895.43	12857.8	0.3343
1997 May 22	7.3414	20.25	6.25	112.36	824.87	833.68	113.56	0.0004	1.5E-06	0.000382	12824.5	12895.43	12759.3	1.1991
1997 May 23	7.2649	20.25	6.25	112.38	818.42	834.14	114.82	0.0004	2.15E-06	0.000381	12828.9	13183.06	12903	2.4393
1997 May 26	7.3396	20.25	6.25	112.44	825.23	835.53	113.84	0.0004	-2.1E-06	0.000386	12641.8	12859.17	12799.5	1.4022
1997 May 27	7.3126	20.25	6.25	112.46	822.34	835.99	114.32	0.0004	7.59E-07	0.000383	12646.2	12909.47	12856.1	1.8667
1997 May 28	7.3074	20.25	6.25	112.47	821.90	836.45	114.47	0.0004	1.46E-07	0.000383	12650.5	13102.61	12874.8	1.9922
1997 May 29	7.3171	20.25	6.25	112.49	823.13	836.92	114.38	0.0004	-2.73E-07	0.000384	12654.8	13062.39	12866.8	1.8846
1997 May 30	7.3241	20.25	6.25	112.51	824.06	837.38	114.33	0.0004	-1.97E-07	0.000384	12659.2	13071.89	12863.9	1.8195
1997 Jun 02	7.3019	20.25	6.25	112.57	821.98	838.78	114.87	0.0004	6.24E-07	0.000383	12672.2	13195.31	12931.1	2.3001
1997 Jun 03	7.2955	20.25	6.25	112.59	821.40	839.24	115.04	0.0004	1.8E-07	0.000383	12676.5	13233.14	12951.8	2.4454
1997 Jun 04	7.3029	20.25	6.25	112.61	822.37	839.71	114.98	0.0004	-2.08E-07	0.000384	12680.8	13221	12948.1	2.3733
1997 Jun 05	7.2999	20.25	6.25	112.63	822.18	840.17	115.09	0.0004	8.43E-08	0.000383	12685.2	13246.55	12962.9	2.4651
1997 Jun 06	7.2849	20.25	6.25	112.65	821.75	840.64	115.24	0.0004	1.41E-07	0.000383	12689.5	13279.44	12981.1	2.5888
1997 Jun 09	7.3244	20.25	6.50	112.71	825.50	842.04	114.96	0.0004	-8.29E-07	0.000377	12702.8	13216.57	12957	2.2576
1997 Jun 10	7.3694	20.25	6.50	112.73	830.72	842.50	114.32	0.0004	-1.26E-06	0.000378	12707.1	13070.14	12887.3	1.599
1997 Jun 11	7.3903	20.25	6.50	112.75	833.23	842.97	114.06	0.0004	-5.87E-07	0.000377	12711.6	13010.75	12860.3	1.3188
1997 Jun 12	7.3477	20.25	6.50	112.77	828.57	843.44	114.79	0.0004	1.2E-06	0.000375	12716.2	13176.66	12944.4	2.0237
1997 Jun 13	7.3447	20.25	6.50	112.79	828.38	843.91	114.90	0.0004	8.43E-08	0.000377	12720.7	13202.06	12959.1	2.1142
1997 Jun 17	7.3695	20.25	6.50	112.87	831.77	845.78	114.77	0.0004	-6.97E-07	0.000377	12738.8	13171.62	12953.4	1.9013
1997 Jun 18	7.3926	20.25	6.50	112.89	834.52	846.25	114.47	0.0004	-6.49E-07	0.000377	12743.3	13103.96	12922.4	1.5861
1997 Jun 19	7.408	20.25	6.50	112.91	836.41	846.72	114.30	0.0004	-4.33E-07	0.000377	12747.9	13064.02	12905	1.3914
1997 Jun 20	7.4279	20.25	6.50	112.93	838.81	847.19	114.05	0.0004	-5.99E-07	0.000377	12752.4	13008.54	12879.8	1.1283
1997 Jun 23	7.458	20.25	6.50	112.99	842.66	848.60	113.78	0.0004	-8.45E-07	0.000377	12766.1	12946.74	12856.1	0.7967
1997 Jun 24	7.5109	20.25	6.50	113.01	848.79	849.07	113.05	0.0004	-1.49E-06	0.000378	12770.6	12779.18	12774.9	0.0379
1997 Jun 25	7.5014	20.25	6.50	113.05	847.98	849.54	113.25	0.0004	2.67E-07	0.000376	12775.2	12825.73	12800.4	0.2237
1997 Jun 26	7.5115	20.25	6.50	113.05	849.16	850.01	113.16	0.0004	-2.84E-07	0.000377	12779.7	12805.51	12792.6	0.1141
1997 Jun 27	7.5294	20.25	6.50	113.07	851.33	850.48	112.96	0.0004	-5.03E-07	0.000377	12784.3	12758.84	12771.5	-0.112
1997 Jun 30	7.5199	20.25	6.50	113.13	850.71	851.90	113.29	0.0004	2.67E-07	0.000378	12797.9	12833.72	12815.8	0.1581
1997 Jul 01	7.5559	20.25	6.50	113.15	854.94	852.37	112.81	0.0004	-1.01E-06	0.000378	12802.5	12725.82	12764.1	-0.339
1997 Jul 02	7.5244	20.25	6.50	113.17	851.52	852.84	113.34	0.0004	8.85E-07	0.000376	12807	12846.84	12826.9	0.1757
1997 Jul 03	7.5848	20.25	6.50	113.19	858.51	853.32	112.50	0.0004	-1.7E-06	0.000378	12811.6	12657.08	12734.1	-0.685
1997 Jul 04	7.6332	20.25	6.50	113.21	864.14	853.79	111.35	0.0004	-1.36E-06	0.000378	12816.2	12510.95	12662.6	-1.356
1997 Jul 07	7.6729	20.25	6.50	113.27	869.10	855.21	111.46	0.0004	-1.11E-06	0.000378	12829.9	12423.07	12624.8	-1.81
1997 Jul 08	7.6558	20.25	6.50	113.29	867.32	855.69	111.77	0.0004	4.8E-07	0.000376	12834.4	12492.48	12662.3	-1.519
1997 Jul 09	7.6942	20.25	6.50	113.31	871.82	856.16	111.27	0.0004	-1.08E-06	0.000378	12839	12381.82	12508.3	-2.036
1997 Jul 10	7.6736	20.25	6.75	113.33	869.65	856.64	111.63	0.0004	5.78E-07	0.000369	12843.6	12462.21	12551.5	-1.695
1997 Jul 11	7.7112	20.25	6.75	113.35	874.07	857.11	111.15	0.0004	-1.06E-06	0.000371	12848.3	12354.67	12559.1	-2.199
1997 Jul 14	7.6855	20.25	6.75	113.41	871.64	858.54	111.71	0.0004	7.21E-07	0.000369	12862.6	12478.87	12669.3	-1.704
1997 Jul 15	7.6853	20.25	6.75	113.43	871.78	859.01	111.77	0.0004	5.81E-09	0.000377	12867.3	12493.37	12679	-1.661
1997 Jul 16	7.6405	20.25	6.75	113.46	866.86	859.49	112.49	0.0004	1.26E-06	0.000369	12872.1	12654.34	12752.8	-0.964
1997 Jul 17	7.6159	20.25												

1997 Sep 12	7.5225	20.25	7.00	114.71	862.88	887.58	117.99	0.0004	-1.79E-06	0.000365	13157.7	13921.76	13534.3	3.2838
1997 Sep 15	7.4943	20.25	7.00	114.77	860.14	889.06	118.63	0.0004	7.9E-07	0.000362	13172.8	14073.45	13615.7	3.8588
1997 Sep 16	7.4626	20.25	7.00	114.79	856.67	889.55	119.20	0.0004	3.88E-07	0.000362	13177.9	14209.02	13883.7	4.4068
1997 Sep 17	7.4496	20.25	7.00	114.82	855.34	890.05	119.48	0.0004	3.64E-07	0.000363	13182.9	14274.48	13717.8	4.659
1997 Sep 18	7.5039	20.25	7.00	114.84	861.74	890.54	118.68	0.0004	-1.52E-06	0.000364	13188	14084.26	13628.7	3.8382
1997 Sep 19	7.5313	20.25	7.00	114.86	865.05	891.04	118.31	0.0004	-7.68E-07	0.000364	13193	13997.48	13589.3	3.4501
1997 Sep 22	7.5402	20.25	7.00	114.93	866.57	892.52	118.37	0.0004	-2.49E-07	0.000363	13208.2	14010.98	13603.7	3.441
1997 Sep 23	7.5746	20.25	7.00	114.95	870.69	893.01	117.90	0.0004	-9.64E-07	0.000364	13213.3	13899.42	13552	2.9468
1997 Sep 25	7.554	20.25	7.00	114.99	868.66	894.00	118.35	0.0004	5.77E-07	0.000362	13223.4	14006.36	13609.3	3.3554
1997 Sep 26	7.5387	20.25	7.00	115.02	867.06	894.50	118.65	0.0004	4.29E-07	0.000363	13228.5	14078.88	13647.1	3.6393
1997 Sep 29	7.527	20.25	7.00	115.08	866.22	895.99	119.04	0.0004	3.28E-07	0.000363	13243.7	14169.73	13698.9	3.9553
1997 Sep 30	7.5334	20.25	7.00	115.10	867.12	896.49	119.00	0.0004	-1.79E-07	0.000363	13248.8	14161.37	13697.5	3.8981
1997 Oct 01	7.5299	20.25	7.00	115.13	866.88	896.98	119.12	0.0004	9.8E-08	0.000363	13253.9	14190.27	13714.1	3.9974
1997 Oct 02	7.5306	20.25	7.00	115.15	867.13	897.48	119.18	0.0004	-1.96E-08	0.000363	13259	14203.38	13723	4.0304
1997 Oct 03	7.5216	20.25	7.00	115.17	866.26	897.98	119.39	0.0004	2.52E-07	0.000363	13264	14253.19	13749.7	4.2171
1997 Oct 06	7.5384	20.25	7.00	115.24	868.89	899.47	119.32	0.0004	-4.71E-07	0.000363	13279.3	14237.01	13749.8	4.083
1997 Oct 07	7.5454	20.25	7.00	115.26	869.67	899.97	119.27	0.0004	-1.96E-07	0.000363	13284.4	14226.37	13747.3	4.0163
1997 Oct 08	7.5709	20.25	7.00	115.28	872.77	900.47	118.94	0.0004	-7.14E-07	0.000364	13289.5	14146.39	13711.3	3.6585
1997 Oct 09	7.5774	20.25	7.00	115.30	873.89	900.97	118.90	0.0004	-1.82E-07	0.000363	13294.6	14137.8	13709.7	3.6003
1997 Oct 10	7.5839	20.25	7.00	115.32	874.61	901.47	118.87	0.0004	-1.82E-07	0.000363	13299.7	14129.24	13708.2	3.5421
1997 Oct 13	7.5702	20.25	7.00	115.39	873.53	902.97	119.28	0.0004	3.84E-07	0.000363	13315	14227.67	13763.8	3.8891
1997 Oct 14	7.5571	20.25	7.00	115.41	872.19	903.47	119.55	0.0004	3.67E-07	0.000363	13320.1	14292.89	13797.9	4.14
1997 Oct 15	7.5642	20.25	7.00	115.43	873.17	903.97	119.51	0.0004	-1.99E-07	0.000363	13325.2	14281.9	13795.3	4.0719
1997 Oct 16	7.5832	20.25	7.00	115.46	875.53	904.88	119.27	0.0004	-5.32E-07	0.000363	13330.3	14226.19	13771.7	3.8166
1997 Oct 17	7.5798	20.25	7.00	115.48	875.31	904.98	119.39	0.0004	9.52E-08	0.000363	13335.5	14254.76	13787.4	3.9141
1997 Oct 20	7.6664	20.25	7.00	115.55	885.82	908.48	118.24	0.0004	-2.42E-06	0.000365	13350.8	13980.96	13662.3	2.6954
1997 Oct 21	7.6896	19.25	7.00	115.57	888.67	906.96	117.95	0.0003	-6.49E-07	0.000336	13355.9	13911.39	13630.8	2.3787
1997 Oct 22	7.6873	19.25	7.00	115.59	888.83	907.44	118.04	0.0003	5.04E-08	0.000336	13361	13932.59	13643.5	2.4464
1997 Oct 23	7.7054	19.25	7.00	115.61	890.84	907.92	117.83	0.0003	-4.93E-07	0.000336	13366.2	13883.65	13622.5	2.2167
1997 Oct 24	7.7147	19.25	7.00	115.63	892.08	908.40	117.75	0.0003	-2.6E-07	0.000336	13371.3	13864.81	13615.8	2.1146
1997 Oct 27	7.7797	19.25	7.00	115.70	900.12	909.83	116.95	0.0003	-1.82E-06	0.000337	13386.7	13877.27	13531.2	1.249
1997 Oct 28	8.1383	19.25	7.00	115.72	941.79	910.31	111.86	0.0003	-1E-05	0.000346	13391.8	12511.68	12944.3	-3.867
1997 Oct 29	8.0053	19.25	7.00	115.75	926.58	910.79	113.77	0.0003	3.72E-08	0.000332	13397	12944.51	13188.8	-1.971
1997 Oct 30	8.0894	19.25	7.00	115.77	936.49	911.28	112.65	0.0003	-2.35E-06	0.000338	13402.1	12690.14	13041.3	-3.117
1997 Oct 31	8.052	19.25	7.00	115.79	932.34	911.76	113.23	0.0003	1.05E-06	0.000335	13407.2	12821.31	13111.3	-2.556
1997 Nov 03	8.0254	19.25	7.00	115.86	929.79	913.20	113.79	0.0003	7.44E-07	0.000335	13422.7	12947.82	13183.1	-2.068
1997 Nov 04	8.0422	19.25	7.00	115.88	931.92	913.68	113.61	0.0003	-4.7E-07	0.000336	13427.8	12907.39	13165	-2.268
1997 Nov 05	8.1133	19.25	7.00	115.90	940.34	914.16	112.67	0.0003	-1.99E-06	0.000338	13433	12695.53	13059.1	-3.226
1997 Nov 06	8.0889	19.25	7.25	115.92	935.37	914.64	113.35	0.0003	1.24E-06	0.000327	13438.1	12849.18	13140.4	-2.569
1997 Nov 07	8.1651	19.25	7.25	115.95	946.71	915.13	112.08	0.0003	-2.69E-06	0.000331	13443.5	12561.43	12995	-3.868
1997 Nov 10	8.1323	19.25	7.25	116.02	943.47	916.57	112.71	0.0003	9.18E-07	0.000328	13459.5	12703.08	13075.8	-3.307
1997 Nov 11	8.2224	19.25	7.25	116.04	954.11	917.06	111.53	0.0003	-2.52E-08	0.000331	13464.8	12439.3	12941.9	-4.506
1997 Nov 12	8.2697	19.25	7.25	116.06	959.79	917.54	110.95	0.0003	-1.32E-06	0.00033	13470.2	12310.38	12877.2	-5.109
1997 Nov 13	8.2118	19.25	7.25	116.08	953.25	918.03	111.79	0.0003	1.62E-06	0.000327	13475.5	12497.77	12977.4	-4.291
1997 Nov 14	8.1798	19.25	7.25	116.11	949.73	918.51	112.29	0.0003	8.95E-07	0.000328	13480.9	12609.03	13037.7	-3.887
1997 Nov 17	8.1928	19.25	7.25	116.18	951.81	919.96	112.29	0.0003	-3.64E-07	0.000329	13497	12608.85	13045.4	-3.817
1997 Nov 18	8.2162	19.25	7.25	116.20	954.72	920.45	112.03	0.0003	-6.55E-07	0.000329	13502.3	12550.36	13017.6	-4.171
1997 Nov 19	8.2318	19.25	7.25	116.22	956.72	920.93	111.88	0.0003	-4.36E-07	0.000329	13507.7	12516.03	13002.4	-4.348
1997 Nov 20	8.2222	19.25	7.25	116.25	955.80	921.42	112.06	0.0003	2.69E-07	0.000323	13513.1	12558.51	13027	-4.181
1997 Nov 21	8.1817	19.25	7.25	116.27	951.28	921.90	112.68	0.0003	1.13E-06	0.000328	13518.4	12696.53	13101	-3.59
1997 Nov 24	8.192	19.25	7.25	116.34	953.04	923.36	112.72	0.0003	-2.88E-07	0.000329	13534.5	12704.73	13113.1	-3.623
1997 Nov 25	8.18	19.25	7.25	116.36	951.83	923.85	112.94	0.0003	3.36E-07	0.000328	13539.9	12755.48	13141.8	-3.421
1997 Nov 26	8.1322	19.25	7.25	116.38	946.46	924.34	113.66	0.0003	1.34E-06	0.000327	13545.3	12919.48	13228.7	-2.72
1997 Nov 27	8.1122	19.25	7.25	116.41	944.32	924.83	114.00	0.0003	5.59E-07	0.000328	13550.7	12996.97	13270.9	-2.403
1997 Nov 28	8.1335	19.25	7.25	116.43	946.99	925.31	113.77	0.0003	-5.96E-07	0.000329	13556.1	12942.62	13245.8	-2.865
1997 Dec 01	8.1783	19.25	7.25	116.50	952.77	926.78	113.32	0.0003	-1.25E-06	0.00033	13572.2	12841.75	13201.9	-3.178
1997 Dec 02	8.2121	19.25	7.25	116.52	956.90	927.27	112.91	0.0003	-9.45E-07	0.00033	13577.6	12749.7	13157.1	-3.608
1997 Dec 03	8.1933	19.25	7.25	116.55	954.90	927.75	113.23	0.0003	5.26E-07	0.000328	13583	12821.79	13196.9	-3.319
1997 Dec 04	8.1942	19.25	7.25	116.57	955.19	928.24	113.28	0.0003	-2.52E-06	0.000329	13588.4	12832.5	13205	-3.283
1997 Dec 05	8.0889	19.25	7.25	116.59	944.27	928.73	114.67	0.0003	2.66E-06	0.000328	13593.8	13150.14	13370.1	-1.918
1997 Dec 08	8.0702	19.25	7.25	116.66	941.49	930.20	115.26	0.0003	8.02E-07	0.000323	13610	13285.77	13446.9	-1.398
1997 Dec 09	8.0292	19.25	7.25	116.69	936.89	930.69	115.91	0.0003	1.15E-06	0.000328	13615.4	13435.97	13525.4	-0.772
1997 Dec 10	8.0582	19.25	7.25	116.71	940.46	931.18	115.58	0.0003	-8.11E-07	0.00033	13620.8	13353.51	13488.5	-1.151
1997 Dec 11	8.1046	19.25	7.25	116.73	946.06	931.68	114.96	0.0003	-1.3E-06	0.00033	13626.2	13214.97	13419	-1.775
1997 Dec 12	8.1341	19.25	7.25	116.75	949.69	932.17	114.60	0.0003	-8.25E-07	0.00033	13631.7	13133.13	13380.1	-2.155
1997 Dec 15	8.0582	19.25	7.25	116.82	941.39	933.64	115.86	0.0003	2.12E-06	0.000327	13647.9	13424.08	13535.5	-0.962
1997 Dec 17	8	19.25	7.25	116.87	934.97	934.63	116.83	0.0003	1.63E-06	0.000327	13658.8	13648.86	13653.8	-0.042
1997 Dec 18	8.0219	19.25	7.25	116.89	937.71	935.12	116.57	0.0003	-6.12E-07	0.000329	13664.2	13588.76	13625.4	-0.323
1997 Dec 19	8.1017	19.25	7.25	116.92	947.23	935.61	115.48	0.0003	-2.23E-06	0.000331	13669.6	13336.44	13502	-1.434
1997 Dec 22	8.0914	19.25	7.25	116.99	946.99	937.09	115.81	0.0003	2.88E-07	0.000323	13685.9	13412.76	13548.6	-1.173
1997 Dec 23	8.0774	19.25	7.25	117.01	945.14	937.59	116.08	0.0003	3.91E-07	0.000323	13691.3	13473.49	13	

1998 Feb 23	8.1086	19.25	7.25	118.46	960.54	968.73	119.47	0.0003	-2.87E-07	0.000329	14032.7	14273.07	14152.4	1.0103
1998 Feb 24	8.1235	19.25	7.25	118.48	962.50	969.24	119.31	0.0003	-4.16E-07	0.000329	14038.3	14235.76	14136.7	0.8306
1998 Feb 25	8.1417	19.25	7.25	118.51	964.85	969.76	119.11	0.0003	-5.08E-07	0.000329	14043.8	14187.14	14115.3	0.6031
1998 Feb 26	8.1174	19.25	7.25	118.53	962.16	970.27	119.53	0.0003	6.78E-07	0.000328	14049.4	14287.27	14167.8	0.9981
1998 Feb 27	8.1523	19.25	7.25	118.55	966.49	970.78	119.08	0.0003	-9.73E-07	0.00033	14055	14180.15	14117.4	0.5267
1998 Mar 02	8.179	19.25	7.25	118.62	970.23	972.32	118.88	0.0003	-7.45E-07	0.000329	14071.7	14132.33	14102	0.2551
1998 Mar 03	8.1327	19.25	7.25	118.65	964.93	972.83	119.62	0.0003	1.29E-06	0.000327	14077.3	14308.78	14192.6	0.9714
1998 Mar 04	8.1332	19.25	7.25	118.67	965.18	973.34	119.68	0.0003	-1.39E-08	0.000329	14082.9	14322.12	14202	1.0035
1998 Mar 05	8.1347	19.25	7.25	118.70	965.55	973.85	119.72	0.0003	-4.18E-08	0.000329	14088.5	14331.94	14209.7	1.021
1998 Mar 06	8.1305	19.25	7.25	118.72	965.24	974.37	119.84	0.0003	1.17E-07	0.000329	14094.1	14361.89	14227.4	1.1224
1998 Mar 09	8.1525	18.25	7.25	118.79	968.43	975.83	119.70	0.0003	-6.13E-07	0.000302	14110.9	14327.37	14218.7	0.9076
1998 Mar 10	8.1419	18.25	7.25	118.81	967.36	976.32	119.91	0.0003	2.96E-07	0.000301	14116.5	14379.06	14247.2	1.0997
1998 Mar 11	8.1592	18.25	7.25	118.84	969.61	976.81	119.72	0.0003	-4.82E-07	0.000302	14122.1	14332.47	14226.9	0.8817
1998 Mar 12	8.2173	18.25	7.25	118.86	976.71	977.29	118.93	0.0003	-1.62E-06	0.000303	14127.8	14144.65	14136.2	0.0711
1998 Mar 13	8.2404	18.25	7.25	118.88	979.65	977.78	118.66	0.0003	-6.44E-07	0.000302	14133.4	14079.53	14106.4	-0.227
1998 Mar 16	8.2932	18.25	7.25	118.95	986.51	979.25	118.08	0.0003	-1.47E-06	0.000303	14150.2	13942.55	14048	-0.876
1998 Mar 17	8.2777	18.25	7.25	118.98	984.87	979.74	118.36	0.0003	4.32E-07	0.000301	14155.8	14008.82	14082.1	-0.619
1998 Mar 18	8.3193	18.25	7.25	119.00	990.01	980.23	117.83	0.0003	-1.16E-06	0.000302	14161.5	13882.94	14021.5	-1.176
1998 Mar 19	8.3041	18.25	7.25	119.03	988.40	980.72	118.10	0.0003	4.24E-07	0.000301	14167.1	13947.75	14057	-0.925
1998 Mar 20	8.2935	18.25	7.25	119.05	987.33	981.21	118.31	0.0003	2.95E-07	0.000301	14172.7	13997.41	14084.8	-0.739
1998 Mar 23	8.3049	18.25	7.25	119.12	989.28	982.68	118.33	0.0003	-3.18E-07	0.000302	14189.6	14000.92	14094.9	-0.795
1998 Mar 24	8.3503	18.25	7.25	119.14	994.89	983.17	117.74	0.0003	-1.27E-06	0.000303	14195.2	13862.94	14028.1	-1.403
1998 Mar 25	8.3174	18.25	7.25	119.17	991.16	983.66	118.27	0.0003	9.17E-07	0.0003	14200.9	13986.8	14093.4	-0.902
1998 Mar 26	8.3347	18.25	7.25	119.19	993.42	984.16	118.08	0.0003	-4.82E-07	0.000302	14206.5	13942.73	14074	-1.112
1998 Mar 27	8.3974	18.25	7.25	119.21	1001.09	984.65	117.28	0.0003	-1.75E-06	0.000303	14212.2	13749.04	13978.7	-1.959
1998 Mar 30	8.3791	18.25	7.25	119.29	999.51	986.12	117.69	0.0003	5.1E-07	0.000301	14229.1	13850.62	14038.6	-1.597
1998 Mar 31	8.4261	18.25	7.25	119.31	1005.31	986.62	117.09	0.0003	-1.31E-06	0.000303	14234.8	13710.23	13970	-2.219
1998 Apr 01	8.4403	18.25	7.25	119.33	1007.21	987.11	116.95	0.0003	-3.96E-07	0.000302	14240.4	13607.81	13958.3	-2.381
1998 Apr 02	8.4185	18.25	7.25	119.36	1004.81	987.60	117.31	0.0003	6.07E-07	0.000301	14246.1	13762.49	14002.2	-2.043
1998 Apr 03	8.3858	18.25	7.25	119.38	1001.10	988.10	117.83	0.0003	9.11E-07	0.0003	14251.7	13883.91	14066.6	-1.551
1998 Apr 06	8.3433	18.25	7.25	119.45	996.62	989.58	118.61	0.0003	1.18E-06	0.0003	14268.7	14067.82	14167.9	-0.844
1998 Apr 07	8.4035	18.25	7.25	119.48	1004.01	990.08	117.82	0.0003	-1.68E-06	0.000303	14274.4	13880.86	14076.3	-1.658
1998 Apr 08	8.4276	18.25	7.25	119.50	1007.09	990.57	117.54	0.0003	-6.71E-07	0.000302	14280.1	13815.39	14045.8	-1.96
1998 Apr 09	8.4313	18.25	7.25	119.52	1007.73	991.07	117.55	0.0003	-1.03E-07	0.000301	14285.7	13817.07	14049.5	-1.977
1998 Apr 14	8.4137	18.25	7.25	119.64	1006.63	993.54	118.09	0.0003	4.9E-07	0.000301	14314.1	13944.4	14128.1	-1.555
1998 Apr 15	8.452	18.25	7.25	119.67	1011.41	994.04	117.81	0.0003	-1.07E-06	0.000302	14319.8	13832.13	14073.9	-2.055
1998 Apr 16	8.5206	18.25	7.25	119.69	1019.82	994.54	116.72	0.0003	-1.91E-06	0.000303	14325.5	13623.91	13970.3	-2.968
1998 Apr 17	8.5428	18.25	7.25	119.71	1022.68	995.03	116.48	0.0003	-6.18E-07	0.000302	14331.2	13566.75	13943.7	-3.237
1998 Apr 20	8.4542	18.25	7.25	119.78	1012.68	996.53	117.87	0.0003	2.47E-06	0.000299	14348.3	13894.19	14119.4	-1.911
1998 Apr 21	8.4653	18.25	7.25	119.81	1014.21	997.03	117.78	0.0003	-3.09E-07	0.000302	14354	13871.84	14110.8	-2.03
1998 Apr 22	8.4508	18.25	7.25	119.83	1012.68	997.52	118.04	0.0003	4.04E-07	0.000301	14359.7	13933.21	14144.8	-1.793
1998 Apr 23	8.4298	18.25	7.25	119.86	1010.34	998.02	118.40	0.0003	5.9E-07	0.000301	14365.4	14017.38	14190.3	-1.461
1998 Apr 24	8.4364	18.25	7.25	119.88	1011.35	998.52	118.36	0.0003	-1.89E-07	0.000301	14371.1	14008.79	14188.8	-1.521
1998 Apr 28	8.439	18.25	7.25	119.97	1012.47	1000.52	118.58	0.0003	-7.24E-08	0.000301	14393.9	14056.22	14224.1	-1.416
1998 Apr 29	8.4199	18.25	7.25	120.00	1010.38	1001.02	118.89	0.0003	5.52E-07	0.000301	14399.7	14134.19	14286.3	-1.111
1998 Apr 30	8.438	18.25	7.25	120.02	1012.75	1001.52	118.69	0.0003	-5.04E-07	0.000302	14405.4	14087.89	14245.7	-1.331
1998 May 04	8.4271	18.25	7.25	120.2	1012.24	1003.52	119.08	0.0003	3.03E-07	0.000301	14428.3	14180.71	14304	-1.035
1998 May 05	8.4233	18.25	7.25	120.14	1011.99	1004.02	119.20	0.0003	1.06E-07	0.000301	14434	14207.71	14320.4	-0.946
1998 May 06	8.393	18.25	7.25	120.17	1008.55	1004.53	119.69	0.0003	8.44E-07	0.0003	14439.8	14324.79	14382.2	-0.479
1998 May 07	8.413	18.25	7.25	120.19	1011.15	1005.03	119.46	0.0003	-5.57E-07	0.000302	14445.5	14271.02	14358	-0.728
1998 May 08	8.2931	18.25	7.25	120.21	996.94	1005.53	121.25	0.0003	3.34E-06	0.000298	14451.2	14701.35	14575.8	0.0359
1998 May 11	8.2688	18.25	7.25	120.28	994.61	1007.04	121.79	0.0003	6.76E-07	0.000301	14468.5	14382.28	14649.2	1.503
1998 May 12	8.2772	18.25	7.25	120.31	995.82	1007.54	121.73	0.0003	-2.34E-07	0.000302	14474.2	14817	14844.6	1.1663
1998 May 13	8.2991	18.25	7.25	120.33	998.65	1008.05	121.46	0.0003	-6.1E-07	0.000302	14480	14753.65	14816.2	1.319
1998 May 14	8.2703	18.25	7.25	120.36	995.39	1008.55	121.95	0.0003	8.02E-07	0.000301	14485.7	14871.44	14677.3	1.5919
1998 May 15	8.2974	18.25	7.25	120.38	998.85	1009.06	121.61	0.0003	-7.54E-07	0.000302	14491.5	14789.23	14639.6	1.2305
1998 May 18	8.241	18.25	7.25	120.45	992.65	1010.57	122.63	0.0003	1.57E-06	0.0003	14508.7	15037.37	14770.7	2.1747
1998 May 19	8.2939	18.25	7.25	120.48	999.22	1011.07	121.91	0.0003	-1.47E-06	0.000303	14514.5	14861.01	14868.7	1.4296
1998 May 20	8.2877	18.25	7.25	120.50	998.97	1011.58	122.06	0.0003	1.73E-07	0.000301	14520.3	14898.14	14708	1.5578
1998 May 21	8.3186	18.25	7.25	120.52	1002.59	1012.09	121.67	0.0003	-8.6E-07	0.000302	14526	14802.45	14863.5	1.1413
1998 May 22	8.2955	18.25	7.25	120.55	1000.01	1012.59	122.07	0.0003	6.43E-07	0.000301	14531.8	14899.9	14714.7	1.5172
1998 May 25	8.3876	18.25	7.25	120.62	1011.71	1014.11	120.91	0.0003	-2.58E-06	0.000304	14549.1	14618.23	14583.6	0.2861
1998 May 26	8.3625	18.25	7.25	120.64	1008.88	1014.62	121.33	0.0003	6.98E-07	0.000301	14554.9	14720.83	14637.6	0.6857
1998 May 27	8.3857	18.25	7.25	120.67	1011.88	1015.12	121.05	0.0003	-6.46E-07	0.000302	14560.7	14854.13	14607.3	0.3665
1998 May 28	8.3895	18.25	7.25	120.69	1012.54	1015.63	121.06	0.0003	-1.06E-07	0.000301	14566.5	14855.5	14610.9	0.3682
1998 May 29	8.3748	18.25	7.25	120.72	1010.97	1016.14	121.33	0.0003	4.09E-07	0.000301	14572.3	14721.71	14646.8	0.6174
1998 Jun 01	8.4461	18.25	7.25	120.79	1020.18	1017.66	120.49	0.0003	-1.98E-06	0.000303	14588.6	14517.66	14553.6	-0.298
1998 Jun 02	8.5219	18.25	7.25	120.81	1029.54	1018.17	119.48	0.0003	-2.11E-06	0.000303	14595.4	14274.81	14434.2	-1.334
1998 Jun 03	8.3517	18.25	7.25	120.84	1009.18	1018.68	121.97	0.0003	4.73E-06	0.000297	14601.2	14877.42	14738.7	1.1374
1998 Jun 04	8.3775	18.25	7.50	120.86	1012.50	1019.19	121.66	0.0003	-7.18E-07	0.000295	14607	14800.71	14703.6	0.7986
1998														

1998 Aug 04	10.1375	24.00	7.50	122.38	1240.66	1057.61	104.33	0.0005	-2.26E-06	0.000454	14977.8	10883.95	12767.8	-18.06
1998 Aug 05	10.121	24.00	7.50	122.41	1238.90	1058.30	104.56	0.0005	4.58E-07	0.000452	14983.9	10933.83	12799.7	-17.84
1998 Aug 06	10.0411	24.00	7.50	122.43	1229.37	1059.00	105.47	0.0005	2.22E-06	0.00045	14990.1	11123.15	12912.7	-16.97
1998 Aug 07	10.1638	24.00	7.50	122.46	1244.65	1059.69	104.26	0.0005	-3.41E-06	0.000455	14996.2	10870.49	12767.8	-18.2
1998 Aug 11	10.3813	24.00	7.50	122.56	1272.33	1062.48	102.35	0.0005	-8.04E-06	0.000458	15020.9	10474.84	12543.5	-20.21
1998 Aug 12	10.3079	24.00	7.50	122.58	1263.59	1063.18	103.14	0.0005	2.04E-06	0.00045	15027.1	10853.32	12643.7	-19.44
1998 Aug 13	10.4167	24.00	7.50	122.61	1277.19	1063.88	102.13	0.0005	-3.02E-06	0.000455	15033.3	10430.96	12522.4	-20.48
1998 Aug 14	10.1585	24.00	7.50	122.64	1245.79	1064.58	104.80	0.0005	7.17E-06	0.000445	15039.4	10982.38	12851.8	-17.84
1998 Aug 17	10.2038	24.00	7.50	122.71	1252.12	1066.68	104.54	0.0005	-1.26E-06	0.000453	15058	10928.07	12827.9	-18.17
1998 Aug 18	10.1127	24.00	7.50	122.74	1241.19	1067.38	105.55	0.0005	2.53E-06	0.000449	15064.2	11140.48	12954.6	-17.19
1998 Aug 19	10.1252	24.00	7.50	122.76	1242.98	1068.08	105.49	0.0005	-3.47E-07	0.000452	15070.4	11127.61	12949.8	-17.27
1998 Aug 20	10.351	24.00	7.50	122.79	1270.96	1068.78	103.25	0.0005	-6.27E-06	0.000458	15076.6	10861.43	12678.2	-19.53
1998 Aug 21	10.428	24.00	7.50	122.81	1280.68	1069.49	102.58	0.0005	-2.14E-06	0.000454	15082.8	10518.38	12595.5	-20.25
1998 Aug 24	10.4715	24.00	7.50	122.89	1286.82	1071.60	102.33	0.0005	-1.21E-06	0.000453	15101.4	10472.37	12575.6	-20.55
1998 Aug 25	10.3462	24.00	7.50	122.91	1271.68	1072.30	103.64	0.0005	3.48E-06	0.000448	15107.6	10741.67	12738.9	-19.27
1998 Aug 28	10.3246	24.00	7.50	122.94	1269.29	1073.01	103.93	0.0005	5.99E-07	0.000451	15113.8	10800.85	12776.6	-19.01
1998 Aug 27	10.6375	24.00	7.50	122.96	1308.02	1073.71	100.94	0.0005	-8.68E-06	0.000461	15120	10188.17	12411.5	-22.03
1998 Aug 28	11.0533	24.00	7.50	122.99	1359.43	1074.42	97.20	0.0005	-1.15E-05	0.000464	15126.2	9448.492	11954.9	-25.79
1998 Aug 31	10.7802	25.50	7.50	123.06	1326.66	1076.87	99.87	0.0005	7.58E-06	0.000485	15144.9	9974.964	12291	-23.19
1998 Sep 01	10.604	25.50	7.50	123.09	1305.24	1077.42	101.81	0.0005	4.89E-06	0.000488	15151.1	10323.62	12506.6	-21.48
1998 Sep 02	10.3856	25.50	7.50	123.12	1276.16	1078.17	104.01	0.0005	6.82E-06	0.000486	15157.3	10819.05	12805.8	-19.1
1998 Sep 03	10.4123	25.50	7.50	123.14	1282.17	1078.93	103.62	0.0005	-1.3E-06	0.000494	15163.5	10737.21	12759.9	-19.52
1998 Sep 04	10.4818	25.50	7.50	123.17	1291.00	1079.68	103.01	0.0005	-1.93E-06	0.000495	15169.8	10610.1	12686.7	-20.16
1998 Sep 07	10.2842	25.50	7.50	123.24	1267.44	1081.94	105.20	0.0005	5.48E-06	0.000488	15188.5	11067.99	12965.6	-18.04
1998 Sep 08	10.3247	25.50	7.50	123.27	1272.69	1082.70	104.87	0.0005	-1.12E-06	0.000494	15194.7	10996.68	12926.4	-18.4
1998 Sep 09	10.4152	25.50	7.50	123.29	1284.11	1083.46	104.03	0.0005	-2.51E-06	0.000496	15201	10821.51	12825.7	-19.27
1998 Sep 10	10.4244	25.50	7.50	123.32	1285.51	1084.21	104.01	0.0005	-2.55E-07	0.000493	15207.2	10817.52	12825.9	-19.31
1998 Sep 11	10.6362	25.50	7.50	123.34	1311.90	1084.97	102.01	0.0005	-5.88E-06	0.000499	15213.5	10405.51	12581.9	-21.34
1998 Sep 14	10.4948	25.50	7.50	123.42	1295.26	1087.25	103.60	0.0005	3.92E-06	0.000489	15232.2	10732.64	12786	-19.82
1998 Sep 15	10.4849	25.50	7.50	123.44	1294.30	1088.00	103.77	0.0005	2.75E-07	0.000493	15238.5	10767.95	12809.7	-19.68
1998 Sep 16	10.1878	25.50	7.50	123.47	1257.88	1088.76	106.87	0.0005	8.24E-06	0.000485	15244.7	11421.09	13195.1	-16.6
1998 Sep 17	10.2868	25.50	7.50	123.49	1270.37	1089.53	105.91	0.0005	-2.75E-06	0.000496	15251	11217.97	13080	-17.58
1998 Sep 18	10.3468	25.50	7.50	123.52	1278.04	1090.29	105.37	0.0005	-1.66E-06	0.000495	15257.3	11103.74	13015.9	-18.15
1998 Sep 21	10.3068	25.50	7.50	123.60	1273.88	1092.57	106.00	0.0005	1.11E-06	0.000492	15276.1	11237.05	13101.8	-17.59
1998 Sep 22	10.2547	25.50	7.50	123.62	1267.71	1093.34	106.62	0.0005	1.44E-06	0.000492	15282.4	11367.39	13180.3	-17
1998 Sep 23	10.0137	25.50	7.50	123.65	1238.17	1094.10	109.28	0.0005	6.88E-06	0.000486	15288.7	11937.79	13509.7	-14.39
1998 Sep 25	9.9109	25.50	7.50	123.70	1225.96	1095.63	110.55	0.0005	2.85E-06	0.00049	15301.2	12220.81	13674.5	-13.15
1998 Sep 28	9.8775	25.50	7.50	123.77	1222.58	1097.92	111.15	0.0005	9.26E-07	0.000492	15320.1	12355.22	13758	-12.62
1998 Sep 29	9.9505	25.50	7.50	123.80	1231.87	1098.69	110.42	0.0005	-2.02E-06	0.000495	15328.4	12191.62	13669.4	-13.38
1998 Sep 30	10.0118	25.50	7.50	123.83	1239.71	1099.46	109.82	0.0005	-1.7E-06	0.000495	15332.7	12059.62	13598	-14.01
1998 Oct 01	10.2445	25.50	7.50	123.85	1268.79	1100.23	107.40	0.0005	-6.45E-06	0.0005	15339	11534.08	13301.2	-16.45
1998 Oct 02	10.4793	25.50	7.50	123.88	1298.14	1101.00	105.06	0.0005	-6.51E-06	0.0005	15345.3	11038.41	13014.9	-18.81
1998 Oct 05	10.2583	25.50	7.50	123.95	1271.54	1103.30	107.55	0.0005	6.13E-06	0.000487	15384.2	11587.48	13331.4	-18.4
1998 Oct 06	10.1781	25.50	7.50	123.98	1281.86	1104.07	108.48	0.0005	2.22E-06	0.000491	15370.5	11766.92	13448.6	-15.5
1998 Oct 07	10.0556	25.50	7.50	124.00	1246.93	1104.85	109.87	0.0005	3.4E-06	0.00049	15376.9	12072.21	13624.7	-14.13
1998 Oct 08	9.8734	25.50	7.25	124.03	1224.59	1105.62	111.98	0.0005	5.05E-06	0.000495	15383.2	12539.38	13888.7	-12.05
1998 Oct 09	9.9392	25.50	7.25	124.05	1232.99	1106.39	111.32	0.0005	-1.82E-06	0.000502	15389.3	12391.19	13809.1	-12.74
1998 Oct 12	9.7428	25.50	7.25	124.13	1209.35	1108.71	113.80	0.0005	5.44E-06	0.000494	15407.6	12949.92	14125.4	-10.33
1998 Oct 13	9.8371	25.50	7.25	124.15	1221.30	1109.48	112.79	0.0005	-2.61E-06	0.000503	15413.8	12720.58	14002.6	-11.37
1998 Oct 14	9.9121	25.50	7.25	124.18	1230.85	1110.26	112.01	0.0005	-2.08E-06	0.000502	15419.9	12548.32	13909.1	-12.17
1998 Oct 15	9.6439	25.50	7.25	124.20	1197.79	1111.03	115.21	0.0005	7.43E-06	0.000492	15426	13272.39	14308.7	-8.996
1998 Oct 16	9.521	25.50	7.25	124.23	1182.76	1111.81	116.77	0.0005	3.41E-06	0.000496	15432.1	13636.28	14506.4	-7.452
1998 Oct 19	9.6835	24.50	7.25	124.30	1203.66	1114.05	115.05	0.0005	-4.5E-06	0.000477	15450.5	13235.8	14300.2	-9.254
1998 Oct 20	9.645	24.50	7.25	124.32	1199.11	1114.80	115.58	0.0005	1.07E-06	0.000471	15456.7	13359.39	14369.8	-8.742
1998 Oct 21	9.8259	24.50	7.25	124.35	1221.85	1115.54	115.53	0.0005	-5.01E-06	0.000473	15462.8	12889.3	14117.5	-10.82
1998 Oct 22	9.6985	24.50	7.25	124.37	1208.24	1116.29	115.10	0.0005	3.53E-06	0.000469	15468.9	13247.92	14315.4	-9.275
1998 Oct 23	9.7316	24.50	7.25	124.40	1210.60	1117.04	114.79	0.0005	-9.17E-07	0.000475	15475.1	13175.62	14279.1	-9.614
1998 Oct 26	9.7249	24.50	7.25	124.47	1210.49	1119.29	115.10	0.0005	1.86E-07	0.000472	15493.5	13246.97	14326.3	-9.378
1998 Oct 27	9.6051	24.50	7.25	124.50	1195.81	1120.04	116.81	0.0005	3.32E-06	0.000469	15499.7	13597.72	14517.6	-7.888
1998 Oct 28	9.6601	24.50	7.25	124.52	1202.90	1120.80	116.02	0.0005	-1.52E-06	0.000474	15505.9	13461.37	14447.5	-8.499
1998 Oct 29	9.5739	24.50	7.25	124.55	1192.40	1121.55	117.15	0.0005	2.39E-06	0.00047	15512	13723.27	14590.3	-7.401
1998 Oct 30	9.5838	24.50	7.25	124.57	1193.87	1122.30	117.10	0.0005	-2.74E-07	0.000473	15518.2	13713.33	14587.9	-7.488
1998 Nov 02	9.346	24.50	7.25	124.65	1164.94	1124.58	120.33	0.0005	8.59E-06	0.000466	15536.7	14478.18	14998.1	-4.321
1998 Nov 03	9.3642	24.50	7.25	124.67	1167.44	1125.32	120.17	0.0005	-5.04E-07	0.000473	15542.9	14441.33	14982	-4.499
1998 Nov 04	9.2755	24.50	7.25	124.70	1156.62	1126.07	121.40	0.0005	2.48E-06	0.00047	15549	14738.81	15138.4	-3.293
1998 Nov 05	9.3107	24.50	6.75	124.72	1161.24	1126.83	121.02	0.0005	-9.75E-07	0.000487	15555.2	14647.03	15094.3	-3.696
1998 Nov 06	9.2431	24.50	6.75	124.74	1153.02	1127.58	121.99	0.0005	1.87E-06	0.000484	15561	14882.01	15217.7	-2.752
1998 Nov 09	9.1823	23.50	6.75	124.81	1146.07	1129.75	123.04	0.0005	1.68E-06	0.000457	15573.2	15138.05	15356.8	-1.776
1998 Nov 10	9.3249	23.50	6.75	124.84	1164.08	1130.49	121.23	0.0005	-3.95E-09	0.000463	15584	14697.51	15134.3	-3.603
1998 Nov 11	9.3824	23.50	6.75	124.86	1171.48	1131.22	120.57	0.0005						

1999 Jan 13	10.0894	22.00	6.00	126.26	1271.34	1177.21	116.91	0.0004	-9.4E-06	0.000448	15941.1	13667.77	14760.7	-9.349
1999 Jan 14	10.0796	22.00	6.00	126.28	1272.84	1177.92	116.86	0.0004	-2.82E-07	0.000439	15946.3	13658.57	14757.1	-9.417
1999 Jan 15	10.4371	22.00	6.00	126.30	1318.20	1178.63	112.93	0.0004	-9.88E-06	0.000448	15951.5	12752.4	14262.6	-13.37
1999 Jan 18	9.9178	22.00	6.00	126.36	1253.23	1180.76	119.05	0.0004	1.44E-05	0.000424	15967.3	14173.92	15043.9	-7.307
1999 Jan 19	9.9674	22.00	6.00	126.38	1259.70	1181.47	118.53	0.0004	-1.37E-06	0.00044	15972.5	14050.13	14980.5	-7.849
1999 Jan 20	9.9344	22.00	6.00	126.40	1255.74	1182.18	119.00	0.0004	9.12E-07	0.000437	15977.9	14160.68	15041.8	-7.405
1999 Jan 21	9.9301	22.00	6.00	126.42	1255.40	1182.89	119.12	0.0004	1.19E-07	0.000438	15983	14190.04	15059.9	-7.302
1999 Jan 22	10.1052	22.00	6.00	126.44	1277.75	1183.61	117.13	0.0004	-4.84E-06	0.000443	15988.3	13719.06	14810.3	-9.316
1999 Jan 25	10.0999	22.00	6.00	126.51	1277.71	1185.75	117.40	0.0004	1.46E-07	0.000438	16004.1	13783.18	14852.2	-9.105
1999 Jan 26	10.0024	22.00	6.00	126.53	1265.58	1186.46	119.62	0.0004	2.69E-06	0.000436	16009.3	14070.14	15008.4	-7.91
1999 Jan 27	9.9108	22.00	6.00	126.55	1254.20	1187.18	119.79	0.0004	2.53E-06	0.000436	16014.6	14348.71	15158.8	-6.763
1999 Jan 28	9.9933	22.00	6.00	126.57	1264.85	1187.89	118.87	0.0004	-2.28E-06	0.000441	16019.8	14129.79	15045.2	-7.701
1999 Jan 29	9.9348	22.00	6.00	126.59	1257.85	1188.81	119.64	0.0004	1.62E-06	0.000437	16025.1	14313.92	15145.4	-6.95
1999 Feb 01	9.9474	22.00	6.00	126.65	1259.87	1190.76	119.71	0.0004	-3.48E-07	0.000439	16040.9	14329.37	15161	-8.947
1999 Feb 02	9.9193	22.00	6.00	126.67	1258.51	1191.47	120.12	0.0004	7.76E-07	0.000438	16046.2	14428.04	15215.6	-6.557
1999 Feb 03	9.8482	22.00	6.00	126.69	1247.71	1192.19	121.06	0.0004	1.96E-06	0.000436	16051.5	14654.78	15337.2	-5.638
1999 Feb 04	9.8556	22.00	6.00	126.72	1248.85	1192.91	121.04	0.0005	-2.04E-07	0.000452	16056.8	14650.42	15337.5	-5.676
1999 Feb 05	9.9335	22.00	5.50	126.73	1258.92	1193.63	120.16	0.0005	-2.15E-06	0.000454	16061.6	14438.93	15228.7	-6.572
1999 Feb 08	9.7547	22.00	5.50	126.79	1236.81	1195.79	122.59	0.0005	4.94E-06	0.000447	16078.1	15027.3	15542.9	-4.206
1999 Feb 09	9.8516	22.00	5.50	126.81	1249.29	1196.51	121.45	0.0005	-2.68E-06	0.000455	16081	14750.91	15401.6	-5.357
1999 Feb 10	10.0061	22.00	5.50	126.83	1269.07	1197.23	119.65	0.0005	-4.27E-06	0.000456	16085.8	14316.14	15175.2	-7.18
1999 Feb 11	9.8504	22.00	5.50	126.85	1249.51	1197.95	121.61	0.0005	4.3E-06	0.000448	16090.7	14790.1	15426.7	-5.234
1999 Feb 12	9.8874	21.00	5.50	126.87	1254.40	1198.64	121.23	0.0004	-1.02E-06	0.000426	16095.5	14696.51	15380.1	-5.639
1999 Feb 15	9.9252	21.00	5.50	126.93	1259.78	1200.71	120.98	0.0004	-1.04E-06	0.000426	16110.1	14635.18	15354.9	-5.949
1999 Feb 16	10.0019	21.00	5.50	126.94	1269.69	1201.40	120.12	0.0004	-2.12E-06	0.000427	16114.9	14428.16	15248.2	-6.827
1999 Feb 17	10.0104	21.00	5.50	126.96	1270.96	1202.09	120.08	0.0004	-2.35E-07	0.000425	16119.8	14420.25	15246.4	-6.879
1999 Feb 18	10.085	21.00	5.50	126.98	1280.62	1202.78	119.26	0.0004	-2.08E-06	0.000427	16124.6	14224.06	15144.6	-7.718
1999 Feb 19	10.1164	21.00	5.50	127.00	1284.80	1203.48	118.96	0.0004	-8.67E-07	0.000425	16129.5	14152.16	15108.5	-8.039
1999 Feb 22	10.1477	21.00	5.50	127.06	1289.36	1205.55	118.80	0.0004	-8.64E-07	0.000425	16144.1	14113.59	15094.7	-8.259
1999 Feb 23	10.0777	21.00	5.50	127.08	1280.66	1206.25	119.69	0.0004	1.93E-06	0.000423	16148.9	14326.81	15210.6	-7.384
1999 Feb 24	10.0343	21.00	5.50	127.10	1275.34	1206.94	120.28	0.0004	1.2E-06	0.000423	16153.8	14467.64	15287.5	-6.816
1999 Feb 25	9.9299	21.00	5.50	127.12	1262.26	1207.64	121.62	0.0004	2.88E-06	0.000422	16158.7	14790.46	15459.4	-5.501
1999 Feb 28	9.8789	21.00	5.50	127.14	1255.96	1208.33	122.31	0.0004	1.41E-06	0.000423	16163.6	14960.77	15550.5	-4.822
1999 Mar 01	9.838	21.00	5.50	127.19	1251.33	1210.42	123.03	0.0004	1.13E-06	0.000423	16178.2	15137.54	15649.2	-4.159
1999 Mar 02	10.0225	21.00	5.50	127.21	1274.99	1211.11	120.84	0.0004	-5.09E-06	0.00043	16183	14802.14	15372.3	-6.373
1999 Mar 03	10.0668	21.00	5.50	127.23	1280.82	1211.81	120.38	0.0004	-1.22E-06	0.000425	16187.9	14490.57	15315.7	-6.855
1999 Mar 04	10.0449	21.00	5.50	127.25	1278.22	1212.51	120.71	0.0004	6.05E-07	0.000424	16192.8	14570.57	15360.3	-6.542
1999 Mar 05	9.9721	21.00	5.50	127.27	1289.15	1213.20	121.66	0.0004	2.01E-06	0.000423	16197.7	14801.11	15483.7	-5.61
1999 Mar 08	9.9443	20.00	5.50	127.33	1286.18	1215.20	122.20	0.0004	7.67E-07	0.000396	16212.3	14932.95	15559.5	-5.127
1999 Mar 09	9.9051	20.00	5.50	127.35	1281.38	1215.88	122.75	0.0004	1.08E-06	0.000398	16217.2	15067.88	15632	-4.596
1999 Mar 10	9.9778	20.00	5.50	127.37	1270.83	1216.53	121.92	0.0004	-2.01E-06	0.000399	16222.1	14865.38	15628.9	-5.442
1999 Mar 11	9.9816	20.00	5.50	127.39	1271.51	1217.20	121.94	0.0004	-1.05E-07	0.000397	16227	14870.35	15533.9	-5.441
1999 Mar 12	10.0689	20.00	5.50	127.40	1282.82	1217.86	120.95	0.0004	-2.41E-06	0.0004	16231.9	14629.63	15409.9	-6.451
1999 Mar 15	10.1169	20.00	5.50	127.46	1289.52	1219.87	120.58	0.0004	-1.32E-06	0.000399	16246.6	14538.82	15369	-6.885
1999 Mar 16	10.0734	20.00	5.50	127.48	1284.17	1220.53	121.16	0.0004	1.2E-06	0.000398	16251.5	14680.73	15446.1	-6.317
1999 Mar 17	10.1935	20.00	5.50	127.50	1299.68	1221.20	119.80	0.0004	-3.31E-06	0.000401	16256.4	14352.54	15274.8	-7.698
1999 Mar 18	10.1898	20.00	5.50	127.52	1299.40	1221.87	119.91	0.0004	1.02E-07	0.000397	16261.3	14378.71	15291	-7.608
1999 Mar 19	10.1314	20.00	5.50	127.54	1292.15	1222.54	120.67	0.0004	1.61E-06	0.000396	16266.2	14560.9	15389.9	-6.87
1999 Mar 23	10.0887	20.00	5.50	127.62	1287.48	1225.22	121.44	0.0004	1.18E-06	0.000396	16285.3	14748.86	15498.3	-6.171
1999 Mar 24	10.2001	20.00	5.50	127.63	1301.89	1225.89	120.18	0.0004	-3.07E-06	0.0004	16290.7	14444.28	15339.7	-7.451
1999 Mar 25	10.1955	20.00	5.50	127.65	1301.50	1226.56	120.30	0.0004	1.27E-07	0.000397	16295.6	14473.18	15357.4	-7.35
1999 Mar 26	10.085	20.00	5.50	127.67	1287.59	1227.24	121.69	0.0004	3.05E-06	0.000394	16300.5	14808.27	15536.5	-5.984
1999 Mar 29	10.1134	20.00	5.50	127.73	1291.80	1229.25	121.55	0.0004	-7.84E-07	0.000398	16315.2	14773.68	15525.3	-6.184
1999 Mar 30	10.0691	20.00	5.50	127.75	1286.33	1229.93	122.15	0.0004	1.22E-06	0.000398	16320.2	14920.3	15604.5	-5.602
1999 Mar 31	9.9665	20.00	5.50	127.77	1273.42	1230.60	123.47	0.0004	2.83E-06	0.000394	16325.1	15245.76	15776.2	-4.296
1999 Apr 01	9.9426	20.00	5.50	127.79	1270.55	1231.28	123.84	0.0004	6.59E-07	0.000397	16330	15335.94	15825.2	-3.951
1999 Apr 06	9.8934	20.00	5.50	127.89	1265.22	1234.65	124.80	0.0004	1.36E-06	0.000396	16354.6	15573.84	15959.5	-3.09
1999 Apr 07	9.8331	20.00	5.50	127.90	1257.70	1235.33	125.63	0.0004	1.66E-06	0.000398	16359.5	15782.71	16068.5	-2.275
1999 Apr 08	9.9492	20.00	5.25	127.92	1272.74	1236.00	124.23	0.0004	-3.2E-06	0.000407	16364.5	15433.42	15892.1	-3.692
1999 Apr 09	9.9739	20.00	5.25	127.94	1276.72	1236.68	123.93	0.0004	-8.19E-07	0.000405	16369.2	15358.5	15855.8	-4.013
1999 Apr 12	9.963	20.00	5.25	128.00	1275.24	1238.71	124.33	0.0004	4.39E-07	0.000404	16383.3	15468.28	15914.1	-3.666
1999 Apr 13	9.9458	20.00	5.25	128.02	1273.22	1239.39	124.61	0.0004	4.74E-07	0.000404	16388	15528.78	15952.6	-3.401
1999 Apr 14	9.8438	20.00	5.25	128.03	1280.34	1240.07	125.97	0.0004	2.81E-06	0.000401	16392.7	15869.63	16129.1	-2.059
1999 Apr 15	9.8073	20.00	5.25	128.05	1255.85	1240.75	126.51	0.0004	1.01E-06	0.000403	16397.5	16005.5	16200.3	-1.54
1999 Apr 16	9.7718	20.00	5.25	128.07	1251.48	1241.43	127.04	0.0004	9.79E-07	0.000403	16402.2	16139.68	16270.4	-1.029
1999 Apr 19	9.8424	19.00	5.25	128.13	1261.07	1243.37	126.33	0.0004	-1.95E-06	0.000399	16416.3	15958.7	16185.9	-1.798
1999 Apr 20	9.7508	19.00	5.25	128.14	1249.51	1244.02	127.58	0.0004	2.33E-06	0.000397	16421.1	16276.87	16348.8	-0.564
1999 Apr 21	9.7977	19.00	5.25	128.16	1255.70	1244.66	127.04	0.0004	-1.29E-06	0.000397	16425.8	16138.21	16281.4	-1.127
1999 Apr 22	9.7618	19.00	5.25	128.18	1251.28	1245.31	127.57	0.0004	9.9E-07	0.000399	16430.5	16274.05	16352.1	-0.812
1999 Apr 23	9.8563	19.00	5.25	128.20	1263.58	1245.96	126.41	0.00						

1999 Jun 25	9.6452	18.00	5.00	129.35	1247.84	1287.44	133.48	0.0004	-3.57E-06	0.00036	16732.3	17816.89	17286.1	4.1264
1999 Jun 28	9.6199	18.00	5.00	129.41	1244.88	1289.35	134.03	0.0004	6.96E-07	0.000355	16746.1	17963.76	17344.2	4.6223
1999 Jun 29	9.5868	18.00	5.00	129.42	1240.77	1298.98	134.56	0.0004	9.11E-07	0.000356	16750.7	18105.86	17415.1	5.1337
1999 Jun 30	9.5005	18.00	5.00	129.44	1229.76	1290.62	135.85	0.0004	2.37E-06	0.000354	16755.3	16454.48	17584.4	6.4052
1999 Jul 01	9.4925	18.00	5.00	129.46	1228.90	1291.25	136.03	0.0004	2.2E-07	0.000356	16759.9	18503.84	17610.3	6.569
1999 Jul 02	9.4852	18.00	5.00	129.48	1228.12	1291.89	136.20	0.0004	2.01E-07	0.000356	16764.4	18550.62	17634.9	6.7231
1999 Jul 05	9.5066	18.00	5.00	129.53	1231.40	1293.80	136.10	0.0004	-5.89E-07	0.000357	16778.2	18521.88	17628.5	6.5643
1999 Jul 06	9.4254	18.00	5.00	129.55	1221.05	1294.44	137.34	0.0004	2.23E-06	0.000354	16782.8	18860.97	17791.6	7.7867
1999 Jul 07	9.4617	18.00	5.00	129.57	1225.92	1295.08	136.38	0.0004	-9.99E-07	0.000357	16787.4	18734.99	17734.5	7.3096
1999 Jul 08	9.4259	18.00	5.00	129.58	1221.45	1295.72	137.46	0.0004	9.85E-07	0.000355	16792	18896.2	17813.1	7.8794
1999 Jul 09	9.4519	18.00	5.00	129.60	1224.98	1296.36	137.15	0.0004	-7.15E-07	0.000357	16796.6	18810.92	17775.3	7.5511
1999 Jul 12	9.4637	18.00	5.00	129.66	1227.02	1298.27	137.18	0.0004	-3.25E-07	0.000356	16810.4	18819.61	17786.7	7.5295
1999 Jul 13	9.5762	18.00	5.00	129.67	1241.77	1298.91	135.64	0.0004	-3.09E-06	0.000359	16815	18388.15	17588.8	5.967
1999 Jul 14	9.5588	17.50	5.00	129.69	1239.69	1299.54	135.95	0.0003	4.79E-07	0.000342	16819.6	18482.91	17631.7	6.2613
1999 Jul 15	9.6325	17.50	5.00	129.71	1249.42	1300.16	134.98	0.0003	-2.03E-06	0.000344	16824.3	18218.61	17507.6	5.268
1999 Jul 16	9.6404	17.50	5.00	129.73	1250.61	1300.78	134.93	0.0003	-2.17E-07	0.000343	16828.9	18206.21	17504	5.2043
1999 Jul 19	9.5989	17.50	5.00	129.78	1245.74	1302.65	135.71	0.0003	1.14E-06	0.000341	16842.7	18416.84	17612.2	5.9293
1999 Jul 20	9.7358	17.50	5.00	129.80	1263.68	1303.28	133.86	0.0003	-3.77E-06	0.000346	16847.3	17919.72	17375.2	4.0674
1999 Jul 21	9.6415	17.50	5.00	129.81	1251.61	1303.90	135.24	0.0003	2.59E-06	0.00034	16851.9	18299.49	17556	5.4237
1999 Jul 22	9.6026	17.50	5.00	129.83	1248.73	1304.53	135.85	0.0003	1.07E-06	0.000341	16856.5	18455.66	17638	6.0189
1999 Jul 23	9.8912	17.50	5.00	129.85	1258.41	1305.15	134.67	0.0003	-2.44E-06	0.000345	16861.2	18137.12	17487.5	4.8236
1999 Jul 26	9.7124	17.50	5.00	129.90	1261.68	1307.03	134.57	0.0003	-5.83E-07	0.000343	16875	18110.02	17481.6	4.6696
1999 Jul 27	9.7953	17.50	5.00	129.92	1272.62	1307.66	133.50	0.0003	-2.28E-06	0.000345	16879.6	17821.85	17344.4	3.5768
1999 Jul 28	9.7547	17.50	5.00	129.94	1267.52	1308.28	134.12	0.0003	1.12E-06	0.000341	16884.3	17987.75	17427.3	4.1789
1999 Jul 29	9.8729	17.50	5.00	129.96	1283.06	1308.91	132.58	0.0003	-3.25E-06	0.000346	16888.9	17576.47	17229.3	2.619
1999 Jul 30	9.9785	17.50	5.00	129.98	1296.96	1309.54	131.24	0.0003	-2.9E-06	0.000345	16893.5	17222.92	17057.4	1.261
1999 Aug 02	10.0105	16.50	5.00	130.03	1301.65	1311.32	130.99	0.0003	-8.8E-07	0.000316	16907.4	17159.44	17033	0.9655
1999 Aug 03	10.0373	16.50	5.00	130.05	1305.31	1311.91	130.70	0.0003	-7.37E-07	0.000316	16912	17083.36	16997.5	0.657
1999 Aug 04	10.0284	16.50	5.00	130.06	1304.34	1312.50	130.88	0.0003	2.45E-07	0.000315	16916.7	17129.17	17022.6	0.8143
1999 Aug 05	9.963	16.50	5.00	130.08	1296.01	1313.09	131.80	0.0003	1.8E-06	0.000313	16921.3	17370.49	17144.4	1.7152
1999 Aug 06	9.9895	16.50	5.00	130.10	1299.63	1313.69	131.51	0.0003	-7.28E-07	0.000316	16926	17294.07	17109	1.4072
1999 Aug 10	9.958	16.50	5.00	130.17	1298.24	1316.06	132.16	0.0003	8.66E-07	0.000314	16944.5	17466.65	17203.6	1.9904
1999 Aug 11	9.9335	16.50	5.00	130.19	1293.23	1316.66	132.55	0.0003	6.73E-07	0.000314	16949.1	17568.79	17258.2	2.3584
1999 Aug 12	9.8698	16.50	5.00	130.21	1285.11	1317.25	133.46	0.0003	1.75E-06	0.000313	16953.8	17812.4	17377.3	3.2564
1999 Aug 13	9.8601	16.50	5.00	130.22	1284.03	1317.85	133.85	0.0003	2.67E-07	0.000315	16958.4	17863.6	17405.1	3.4302
1999 Aug 16	9.8252	16.50	5.00	130.28	1280.01	1319.64	134.31	0.0003	9.59E-07	0.000314	16972.4	18039.56	17497.8	4.0334
1999 Aug 17	9.7475	16.50	5.00	130.30	1270.06	1320.23	135.44	0.0003	2.14E-06	0.000313	16977	18344.88	17647.7	5.1473
1999 Aug 18	9.8158	16.50	5.00	130.31	1279.13	1320.83	134.56	0.0003	-1.88E-06	0.000317	16981.7	18106.08	17535.2	4.2479
1999 Aug 19	9.8149	16.50	5.00	130.33	1279.19	1321.43	134.83	0.0003	2.47E-06	0.000315	16986.3	18126.53	17547.2	4.3032
1999 Aug 20	9.9268	16.50	5.00	130.35	1293.95	1322.02	133.18	0.0003	-3.07E-06	0.000318	16991	17736.2	17359.6	2.8278
1999 Aug 23	9.8304	16.50	5.00	130.40	1281.91	1323.82	134.67	0.0003	2.65E-06	0.000312	17005	18134.84	17560.8	4.2626
1999 Aug 24	9.7489	16.50	5.00	130.42	1271.46	1324.42	135.85	0.0003	2.24E-06	0.000313	17009.6	18458	17718.1	5.4319
1999 Aug 25	9.6747	16.50	5.00	130.44	1261.96	1325.01	136.96	0.0003	2.04E-06	0.000313	17014.3	18757.13	17864.5	6.5179
1999 Aug 26	9.678	16.50	5.00	130.46	1262.58	1325.61	136.97	0.0003	-9.07E-06	0.000315	17018.9	18761.29	17868.9	6.5152
1999 Aug 27	9.6663	16.50	5.00	130.47	1261.21	1326.21	137.20	0.0003	3.21E-07	0.000315	17023.6	18823.74	17901.1	6.7251
1999 Aug 30	9.6725	16.50	5.00	130.53	1262.53	1328.01	137.30	0.0003	-1.7E-07	0.000315	17037.6	18850.84	17921.2	6.7695
1999 Aug 31	9.7259	16.50	5.00	130.55	1269.68	1328.61	136.61	0.0003	-1.47E-06	0.000316	17042.3	18661.07	17833.3	6.0595
1999 Sep 01	9.7892	16.50	5.00	130.58	1278.12	1329.21	135.78	0.0003	-1.74E-06	0.000317	17046.9	18437.17	17728.4	5.2197
1999 Sep 02	9.7021	16.50	5.00	130.59	1266.92	1329.81	137.06	0.0003	2.39E-06	0.000313	17051.6	18786.67	17898.1	6.4827
1999 Sep 03	9.72	16.50	5.00	130.60	1269.43	1330.41	136.87	0.0003	-4.92E-07	0.000316	17056.3	18734.47	17875.7	6.2742
1999 Sep 06	9.6636	16.50	5.00	130.65	1262.58	1332.22	137.38	0.0003	1.55E-06	0.000313	17070.3	19005.23	18011.8	7.2061
1999 Sep 07	9.6676	16.50	5.00	130.67	1263.28	1332.82	137.86	0.0003	-1.1E-07	0.000315	17075	19006.68	18015	7.1935
1999 Sep 08	9.7766	16.50	5.00	130.69	1277.70	1333.42	138.39	0.0003	-2.99E-06	0.000318	17079.7	18602.03	17824.6	5.7001
1999 Sep 09	9.8871	16.50	5.00	130.71	1292.31	1334.03	134.93	0.0003	-3.03E-06	0.000318	17084.3	18205.01	17635.8	4.2189
1999 Sep 10	9.9279	16.50	5.25	130.72	1297.82	1334.63	134.43	0.0003	-1.12E-06	0.000309	17089	18072.01	17573.6	3.7072
1999 Sep 13	9.7971	16.50	5.25	130.78	1281.28	1336.44	136.41	0.0003	3.59E-06	0.000305	17103.8	18608.15	17840.1	5.6304
1999 Sep 14	9.7373	16.50	5.25	130.80	1273.64	1337.04	137.31	0.0003	1.64E-06	0.000307	17108.7	18854.45	17960.4	6.5113
1999 Sep 15	9.7958	16.50	5.25	130.82	1281.48	1337.65	136.55	0.0003	-1.61E-06	0.00031	17113.6	18646.77	17853.7	5.7342
1999 Sep 16	9.9303	16.50	5.25	130.84	1299.26	1338.25	134.76	0.0003	-3.69E-06	0.000312	17118.5	18161.48	17532.3	3.9268
1999 Sep 17	9.9064	16.50	5.25	130.86	1296.32	1338.86	135.15	0.0003	6.56E-07	0.000308	17123.5	18265.72	17885.4	4.2941
1999 Sep 20	9.8816	16.50	5.25	130.91	1293.63	1340.67	135.67	0.0003	6.81E-07	0.000307	17138.2	18407.35	17761.5	4.7606
1999 Sep 21	9.8767	16.50	5.25	130.93	1293.18	1341.28	135.80	0.0003	1.35E-07	0.000308	17143.2	18442.28	17780.9	4.8704
1999 Sep 22	9.9025	16.50	5.25	130.95	1296.74	1341.89	135.51	0.0003	-7.08E-07	0.000309	17148.1	18362.9	17745.1	4.559
1999 Sep 23	9.8981	16.50	5.25	130.97	1296.35	1342.49	135.63	0.0003	1.21E-07	0.000303	17153	18395.85	17763.6	4.6617
1999 Sep 27	9.8667	16.50	5.25	131.04	1292.98	1344.92	136.31	0.0003	8.82E-07	0.000307	17172.8	18580.13	17862.5	5.284
1999 Sep 28	9.8997	16.50	5.25	131.06	1297.49	1345.53	135.92	0.0003	-9.06E-07	0.000309	17177.7	18473.16	17817.3	4.8522
1999 Sep 29	9.8445	16.50	5.25	131.08	1290.44	1346.14	136.74	0.0003	1.52E-06	0.000307	17182.7	18697.8	17924.2	5.8573
1999 Sep 30	9.9193	16.50	5.25	131.10	1300.43	1346.74	135.77	0.0003	-2.05E-06	0.00031	17187.6	18433.52	17759.7	4.6686
1999 Oct 01	9.9141	16.50	5.25	131.12	1299.94	1347.35	135.90	0.0003	1.43E-07	0.000309	17192.5	18499.55	17819.6	4.7824
1999 Oct 04	9.9615	15.50	5.25	131.18	1306.72	1349.07	135.43	0.0003	-1.3E-06	0.000302	17207.4			

1999 Dec 01	9.8533	15.50	5.50	132.30	1303.59	1382.70	140.33	0.0003	1.59E-06	0.000272	17503.3	19692.03	13565.5	8.0281
1999 Dec 02	9.8328	15.50	5.50	132.32	1301.08	1383.28	140.68	0.0003	5.62E-07	0.000273	17508.6	19791.02	13614.9	8.3605
1999 Dec 03	9.8714	15.50	5.50	132.34	1306.38	1383.87	140.19	0.0003	-1.08E-06	0.000275	17513.9	19653.23	13552.7	7.85
1999 Dec 06	9.8541	15.50	5.50	132.40	1304.68	1385.63	140.62	0.0003	4.74E-07	0.000273	17529.7	19772.58	13617.4	8.2152
1999 Dec 07	9.9828	15.50	5.50	132.42	1321.92	1386.22	138.86	0.0003	-3.53E-06	0.000277	17535	19282.41	13388	6.4413
1999 Dec 08	10.0332	15.50	5.50	132.44	1328.79	1386.81	138.22	0.0003	-1.38E-06	0.000275	17540.3	19105.39	13306.1	5.7825
1999 Dec 09	10.0062	15.50	5.50	132.46	1325.42	1387.40	138.65	0.0003	7.4E-07	0.000273	17545.6	19224.95	13368.1	6.1944
1999 Dec 10	9.9782	15.50	5.50	132.48	1321.91	1387.99	139.10	0.0003	7.67E-07	0.000273	17550.9	19349.42	13428.2	6.6225
1999 Dec 13	9.941	15.50	5.50	132.54	1317.58	1389.76	139.80	0.0003	1.02E-06	0.000273	17566.7	19544.21	13529.1	7.261
1999 Dec 14	9.9501	15.50	5.50	132.56	1318.98	1390.35	139.73	0.0003	-2.49E-07	0.000274	17572	19525.05	13522.8	7.1725
1999 Dec 15	9.8547	15.50	5.50	132.58	1306.53	1390.94	141.14	0.0003	2.61E-06	0.000271	17577.3	19921.82	13712.9	8.5852
1999 Dec 17	9.9343	15.50	5.50	132.62	1317.48	1392.12	140.13	0.0003	-2.18E-06	0.000276	17587.9	19637.16	13584.3	7.5132
1999 Dec 20	9.8721	15.50	5.50	132.68	1309.82	1393.89	141.20	0.0003	1.7E-06	0.000272	17603.8	19936.09	13733.7	8.5158
1999 Dec 21	9.888	15.50	5.50	132.70	1312.13	1394.49	141.03	0.0003	-4.35E-07	0.000274	17609.1	19888.91	13714.3	8.3286
1999 Dec 22	9.8901	15.50	5.50	132.72	1312.61	1395.08	141.06	0.0003	-5.75E-08	0.000274	17614.4	19897.35	13721.1	8.3386
1999 Dec 23	9.8869	15.50	5.50	132.74	1312.38	1395.67	141.16	0.0003	8.76E-08	0.000274	17619.7	19927.15	13738	8.4241
1999 Dec 24	9.9342	15.50	5.50	132.76	1318.86	1396.26	140.55	0.0003	-1.3E-06	0.000275	17625.1	19754.61	13659.5	7.7917
1999 Dec 28	9.9419	15.50	5.50	132.84	1320.68	1398.63	140.68	0.0003	-2.11E-07	0.000274	17646.3	19791.08	13688	7.8414
1999 Dec 29	9.9569	15.50	5.50	132.86	1322.87	1399.23	140.53	0.0003	-4.11E-07	0.000274	17651.6	19748.26	13670.5	7.6891
1999 Dec 30	9.9646	15.50	5.50	132.88	1324.09	1399.82	140.48	0.0003	-2.11E-07	0.000274	17657	19734.5	13666.8	7.6001
2000 Jan 04	10.0049	15.50	5.50	132.98	1330.45	1402.79	140.21	0.0003	-1.1E-06	0.000275	17683.6	19595.06	13645.2	7.2312
2000 Jan 05	10.0015	15.50	5.50	133.00	1330.20	1403.39	140.32	0.0003	9.31E-08	0.000274	17688.9	19689.14	13662.2	7.3184
2000 Jan 06	9.9987	15.50	5.50	133.02	1329.76	1403.99	140.44	0.0003	1.31E-07	0.000274	17694.2	19724.79	13681.9	7.4253
2000 Jan 07	9.9824	15.50	5.50	133.04	1328.08	1404.58	140.71	0.0003	3.91E-07	0.000274	17699.6	19798.15	13719.5	7.6862
2000 Jan 10	9.9027	15.50	5.50	133.10	1318.05	1406.37	142.02	0.0003	2.18E-06	0.000272	17715.6	20169.41	13902.7	8.9192
2000 Jan 11	9.9878	15.50	5.50	133.12	1329.57	1406.97	140.87	0.0003	-2.33E-06	0.000276	17720.9	19844.01	13752.4	7.7489
2000 Jan 12	10.0888	15.50	5.50	133.14	1340.29	1407.57	139.82	0.0003	-2.16E-06	0.000276	17726.2	19550.37	13616	6.6827
2000 Jan 13	9.9767	15.50	5.75	133.16	1328.50	1408.16	141.15	0.0003	2.47E-06	0.000265	17731.6	19922	13794.9	7.9853
2000 Jan 14	9.9915	15.50	5.75	133.18	1330.68	1408.76	141.00	0.0003	-4.05E-07	0.000267	17737.2	19879.89	13778	7.8151
2000 Jan 17	9.9432	15.50	5.75	133.24	1324.87	1410.56	141.86	0.0003	1.32E-06	0.000268	17753.9	20124.68	13902.2	8.6175
2000 Jan 18	9.9492	15.50	5.75	133.26	1325.88	1411.16	141.84	0.0003	-1.64E-07	0.000267	17759.5	20117.49	13901.8	8.5712
2000 Jan 19	9.9963	15.50	5.75	133.29	1332.37	1411.76	141.23	0.0003	-1.29E-06	0.000268	17765.1	19945.29	13823.7	7.9419
2000 Jan 20	10.0553	15.50	5.75	133.31	1340.44	1412.35	140.46	0.0003	-1.61E-06	0.000269	17770.7	19728.66	13724.1	7.1518
2000 Jan 21	10.1126	15.50	5.75	133.33	1348.29	1412.95	139.72	0.0003	-1.57E-06	0.000269	17776.3	19522.29	13628.9	6.3943
2000 Jan 24	10.1495	14.50	5.75	133.39	1353.85	1414.64	139.38	0.0002	-1.01E-06	0.000241	17793.1	19426.82	13592	5.9892
2000 Jan 25	10.17	14.50	5.75	133.41	1356.80	1415.20	139.15	0.0002	-5.61E-07	0.00024	17798.7	19363.95	13564.9	5.7425
2000 Jan 26	10.111	14.50	5.75	133.43	1349.14	1415.76	140.02	0.0002	1.61E-06	0.000238	17804.4	19606.17	13683.6	6.5891
2000 Jan 27	10.1029	14.50	5.75	133.45	1348.27	1416.33	140.19	0.0002	2.22E-07	0.000239	17810	19653.22	13708.9	6.736
2000 Jan 28	10.1701	14.50	5.75	133.48	1357.45	1416.89	139.32	0.0002	-1.84E-06	0.000242	17815.6	19409.77	13595.6	5.844
2000 Jan 31	10.2472	14.50	5.75	133.54	1368.39	1418.58	138.44	0.0002	-2.11E-06	0.000242	17832.4	19164.39	13486.4	4.8974
2000 Feb 01	10.1907	14.50	5.75	133.56	1361.06	1419.14	139.26	0.0002	1.55E-06	0.000238	17838	19392.88	13599.2	5.6892
2000 Feb 02	10.1107	14.50	5.75	133.58	1350.59	1419.70	140.42	0.0002	2.19E-06	0.000237	17843.7	19716.64	13758.8	6.8358
2000 Feb 03	10.0539	14.50	5.75	133.60	1343.21	1420.27	141.27	0.0002	1.55E-06	0.000238	17849.3	19955.9	13873.2	7.8641
2000 Feb 04	9.9271	14.50	5.75	133.62	1326.48	1420.83	143.13	0.0002	3.47E-06	0.000236	17854.9	20485.22	13924.9	9.5043
2000 Feb 07	9.9594	14.50	5.75	133.69	1331.43	1422.53	142.83	0.0002	-8.83E-07	0.000241	17871.8	20401.1	13904.6	9.147
2000 Feb 08	10.1394	14.50	5.75	133.71	1355.70	1423.09	140.35	0.0002	-4.92E-06	0.000245	17877.4	19698.83	13766	6.6461
2000 Feb 09	10.1161	14.50	5.75	133.73	1352.80	1423.66	140.73	0.0002	6.37E-07	0.000239	17883.1	19805.4	13819.7	7.0041
2000 Feb 10	10.2669	14.50	6.00	133.75	1373.18	1424.22	138.72	0.0002	-4.12E-06	0.000237	17888.7	19243.15	13553.6	4.9711
2000 Feb 11	10.1886	14.50	6.00	133.77	1360.28	1424.79	140.12	0.0002	2.89E-06	0.00023	17894.6	19632.59	13743.4	6.3458
2000 Feb 14	10.1088	14.50	6.00	133.84	1352.86	1426.49	141.14	0.0002	1.69E-06	0.000231	17912.2	19920.82	13888.8	7.3046
2000 Feb 15	10.1009	14.50	6.00	133.86	1352.09	1427.05	141.28	0.0002	1.61E-07	0.000233	17918.1	19859.84	13911.5	7.4211
2000 Feb 16	10.1524	14.50	6.00	133.88	1359.21	1427.62	140.62	0.0002	-1.41E-06	0.000234	17924	19773.66	13926.1	6.7383
2000 Feb 17	10.2047	14.50	6.00	133.90	1366.44	1428.19	139.95	0.0002	-1.43E-06	0.000234	17929.9	19587.05	13740.2	6.0512
2000 Feb 18	10.1546	14.50	6.00	133.92	1359.95	1428.75	140.70	0.0002	1.37E-06	0.000231	17935.8	19796.52	13843.2	6.7755
2000 Feb 21	10.1333	14.50	6.00	133.99	1357.77	1430.46	141.16	0.0002	5.82E-07	0.000232	17953.5	19927.24	13914.6	7.1733
2000 Feb 22	10.1135	14.50	6.00	134.01	1355.34	1431.02	141.50	0.0002	5.41E-07	0.000232	17959.4	20021.24	13962.3	7.4838
2000 Feb 23	10.1796	14.50	6.00	134.03	1364.42	1431.59	140.63	0.0002	-1.81E-06	0.000235	17965.3	19777.78	13849.8	6.5988
2000 Feb 24	10.1313	14.50	6.00	134.06	1358.17	1432.16	141.36	0.0002	1.32E-06	0.000232	17971.2	19882.67	13950.3	7.3034
2000 Feb 25	10.1105	14.50	6.00	134.08	1355.60	1432.73	141.71	0.0002	5.69E-07	0.000232	17977.1	20080.92	13899.9	7.6284
2000 Feb 28	10.0642	14.50	6.00	134.14	1350.06	1434.44	142.53	0.0002	1.27E-06	0.000237	17994.8	20314.44	14191.5	8.3839
2000 Feb 29	10.1333	14.50	6.00	134.17	1359.55	1435.01	141.61	0.0002	-1.89E-06	0.000235	18000.8	20054.26	13899.8	7.4462
2000 Mar 01	10.0231	14.50	6.00	134.19	1344.99	1435.58	143.23	0.0002	3.01E-06	0.00023	18006.7	20513.95	14219.5	9.038
2000 Mar 02	10.0631	14.50	6.00	134.21	1350.58	1436.15	142.71	0.0002	-1.09E-06	0.000234	18012.6	20367.36	14153.8	8.5033
2000 Mar 03	10.1369	14.50	6.00	134.23	1360.71	1436.72	141.73	0.0002	-2.02E-06	0.000235	18018.5	20087.83	13925.1	7.4985
2000 Mar 06	10.2184	14.50	6.00	134.30	1372.32	1438.43	140.77	0.0002	-2.23E-06	0.000235	18036.3	19815.83	13905.1	6.4894
2000 Mar 07	10.2486	14.50	6.00	134.32	1376.34	1439.00	140.44	0.0002	-7.71E-07	0.000234	18042.2	19722.56	13863.7	6.1157
2000 Mar 08	10.2775	14.50	6.00	134.34	1380.71	1439.57	140.07	0.0002	-8.44E-07	0.000234	18048.2	19619.73	13817.5	5.727
2000 Mar 09	10.2197	14.50	6.00	134.37	1373.18	1440.15	140.92	0.0002	1.58E-06	0.000231	18054.1	19858.05	13934.6	6.5531
2000 Mar 10	10.118	14.50	6.00	134.39	1359.73	1440.72	142.39	0.0002	2.78E-06	0.00023	18060	20275.36	14135.7	8.004
2000 Mar 13	10.1017	14.50	6.00	134.45	1358.21	1442.43	142.79							

2000 May 17	10.8023	14.50	6.00	135.90	1440.83	1480.15	139.61	0.0002	-1.67E-06	0.000235	18468.3	19489.97	18972.2	3.7085
2000 May 18	10.8574	14.50	6.00	135.92	1448.56	1480.74	138.94	0.0002	-1.5E-06	0.000234	18474.3	19304.29	18884.7	3.0196
2000 May 19	10.8239	14.50	6.00	135.94	1444.24	1481.33	139.43	0.0002	9.14E-07	0.000232	18480.4	19441.66	18954.9	3.4907
2000 May 22	10.5501	14.50	6.00	136.01	1434.92	1483.09	140.58	0.0002	2.01E-06	0.000231	18488.6	19761.63	19119.7	4.5664
2000 May 23	10.4839	14.50	6.00	136.03	1426.15	1483.68	141.52	0.0002	1.81E-06	0.000231	18504.7	20027.88	19251.2	5.4879
2000 May 24	10.4412	14.50	6.00	136.05	1420.57	1484.27	142.16	0.0002	1.16E-06	0.000232	18510.8	20208.08	19340.8	6.1007
2000 May 25	10.5718	14.50	6.00	136.08	1438.58	1484.86	140.45	0.0002	-3.56E-06	0.000236	18516.9	19727.54	19112.6	4.378
2000 May 26	10.5028	14.50	6.00	136.10	1429.42	1485.45	141.43	0.0002	1.88E-06	0.000231	18523	20003.48	19249	5.3345
2000 May 29	10.5841	14.50	6.00	136.17	1441.20	1487.22	140.51	0.0002	-2.22E-06	0.000235	18541.2	19744.33	19133.3	4.3483
2000 May 30	10.8099	14.50	6.00	136.19	1444.95	1487.81	140.23	0.0002	-7.03E-07	0.000234	18547.3	19664.04	19097.5	4.0399
2000 May 31	10.446	14.50	6.00	136.21	1422.86	1488.40	142.49	0.0002	4.47E-06	0.000228	18553.4	20302.07	19408.1	6.2743
2000 Jun 01	10.4828	14.50	6.00	136.23	1425.38	1488.99	142.31	0.0002	-4.58E-07	0.000233	18559.5	20253	19387.8	6.0796
2000 Jun 02	10.3954	14.50	6.00	136.26	1416.43	1489.58	143.29	0.0002	1.84E-06	0.000231	18565.8	20532.79	19524.5	7.0369
2000 Jun 05	10.4617	14.50	6.00	136.32	1426.17	1491.36	142.55	0.0002	-1.81E-06	0.000235	18584	20321.71	19433.4	6.2312
2000 Jun 06	10.4927	14.50	6.00	136.35	1430.83	1491.95	142.19	0.0002	-8.45E-07	0.000234	18590.1	20217.87	19386.9	5.8441
2000 Jun 07	10.6361	14.50	6.00	136.37	1450.42	1492.54	140.33	0.0002	-3.91E-06	0.000237	18596.2	19692.01	19136.3	3.9604
2000 Jun 08	10.6276	14.50	6.00	136.39	1449.50	1493.14	140.50	0.0002	2.32E-07	0.000233	18602.3	19739.19	19162.3	4.106
2000 Jun 09	10.6801	14.50	6.00	136.41	1456.90	1493.73	139.86	0.0002	-1.43E-06	0.000234	18608.4	19561.14	19078.8	3.4485
2000 Jun 12	10.6182	14.50	6.00	136.48	1449.17	1495.51	140.84	0.0002	1.69E-06	0.000231	18628.8	19837.07	19222.4	4.3642
2000 Jun 13	10.6599	14.50	6.00	136.50	1455.10	1496.11	140.35	0.0002	-1.14E-06	0.000234	18632.9	19697.81	19158	3.9485
2000 Jun 14	10.521	14.50	6.00	136.52	1436.38	1496.70	142.26	0.0002	3.79E-06	0.000229	18639	20237.43	19421.8	5.7335
2000 Jun 15	10.4196	14.50	6.00	136.55	1422.77	1497.29	143.70	0.0002	2.76E-06	0.00023	18645.2	20649.63	19621.8	7.1525
2000 Jun 19	10.4187	14.50	6.00	136.64	1423.58	1499.67	143.94	0.0002	2.45E-08	0.000233	18669.7	20718.88	19867.6	7.3035
2000 Jun 20	10.4178	14.50	6.00	136.66	1423.89	1500.27	144.01	0.0002	2.45E-08	0.000233	18675.8	20738.93	19880.4	7.3507
2000 Jun 21	10.4526	14.50	6.00	136.68	1428.88	1500.87	143.59	0.0002	-9.48E-07	0.000234	18682	20617.44	19625.9	6.9058
2000 Jun 22	10.4204	14.50	6.00	136.70	1424.51	1501.46	144.09	0.0002	8.77E-07	0.000232	18688.1	20761.54	19697.6	7.3842
2000 Jun 23	10.4313	14.50	6.00	136.73	1426.24	1502.06	144.00	0.0002	-2.97E-07	0.000233	18694.2	20734.64	19688	7.2684
2000 Jun 26	10.3139	14.50	6.00	136.79	1410.88	1503.85	145.81	0.0002	3.2E-06	0.00023	18712.7	21259.94	19945.7	9.0136
2000 Jun 27	10.248	14.50	6.00	136.82	1402.10	1504.45	146.80	0.0002	1.8E-06	0.000231	18718.8	21551.36	20085.2	9.987
2000 Jun 28	10.227	14.50	6.00	136.84	1399.46	1505.04	147.16	0.0002	5.72E-07	0.000232	18725	21657.15	20137.8	10.324
2000 Jun 29	10.3048	14.50	6.00	136.86	1410.33	1505.64	146.11	0.0002	-2.12E-06	0.000235	18731.2	21348.32	19997	9.2489
2000 Jun 30	10.3285	14.50	6.00	136.88	1413.81	1506.24	145.83	0.0002	6.46E-07	0.000233	18737.3	21267.35	19962.3	8.949
2000 Jul 03	10.2802	14.50	6.00	136.95	1407.89	1508.03	146.69	0.0002	1.32E-06	0.000232	18755.8	21518.86	20089.9	9.7413
2000 Jul 04	10.3071	14.50	6.00	136.97	1411.81	1508.63	146.37	0.0002	-7.33E-07	0.000234	18762	21423.7	20048.7	9.3941
2000 Jul 05	10.231	14.50	6.00	137.00	1401.61	1509.23	147.52	0.0002	2.07E-06	0.000231	18768.1	21790.87	20209.2	10.519
2000 Jul 06	10.2522	14.50	6.00	137.02	1404.75	1509.83	147.27	0.0002	-5.77E-07	0.000233	18774.3	21888.19	20173.7	10.25
2000 Jul 07	10.3161	14.50	6.00	137.04	1413.74	1510.43	146.42	0.0002	-1.74E-06	0.000235	18780.5	21437.36	20065	9.3732
2000 Jul 10	10.3975	14.50	6.00	137.11	1425.60	1512.23	145.44	0.0002	-2.22E-06	0.000235	18799	21153.35	19941.5	8.3324
2000 Jul 11	10.3102	14.50	6.00	137.13	1413.86	1512.83	146.73	0.0002	2.38E-06	0.00023	18805.2	21530.18	20121.6	9.5997
2000 Jul 12	10.3015	14.50	6.00	137.15	1412.90	1513.43	146.91	0.0002	2.37E-07	0.000233	18811.4	21583.7	20149.9	9.7594
2000 Jul 13	10.3012	14.50	6.00	137.18	1413.09	1514.04	146.98	0.0002	8.17E-09	0.000233	18817.6	21602.11	20161.8	9.7995
2000 Jul 14	10.2877	14.50	6.00	137.20	1408.72	1514.64	147.51	0.0002	9.12E-07	0.000232	18823.7	21760.58	20239	10.315
2000 Jul 17	10.2982	14.50	6.00	137.27	1413.61	1516.44	147.25	0.0002	-8.31E-07	0.000234	18842.3	21883.47	20213	9.9858
2000 Jul 18	10.306	14.50	6.00	137.29	1414.91	1517.04	147.20	0.0002	-2.12E-07	0.000233	18848.5	21667.87	20209.1	9.9102
2000 Jul 19	10.4201	14.50	6.00	137.31	1430.81	1517.65	145.65	0.0002	-3.11E-06	0.000236	18854.7	21212.78	19999	8.3337
2000 Jul 20	10.4508	14.50	6.00	137.33	1435.28	1518.25	145.28	0.0002	-8.36E-07	0.000234	18860.9	21105.09	19951.5	7.9409
2000 Jul 21	10.453	14.50	6.00	137.36	1435.80	1518.85	145.30	0.0002	-5.99E-08	0.000233	18867.1	21112.98	19958.5	7.9455
2000 Jul 24	10.466	14.50	6.00	137.43	1438.29	1520.66	145.30	0.0002	-3.54E-07	0.000233	18885.7	21110.79	19967.3	7.8702
2000 Jul 25	10.5292	14.50	6.00	137.45	1447.22	1521.27	144.48	0.0002	-1.72E-06	0.000235	18891.9	20874.7	19858.6	7.0329
2000 Jul 26	10.5778	14.50	6.00	137.47	1454.14	1521.87	143.87	0.0002	-1.32E-06	0.000234	18898.1	20899.75	19778.4	6.4036
2000 Jul 27	10.526	14.50	6.00	137.49	1447.25	1522.48	144.64	0.0002	1.41E-06	0.000231	18904.3	20920.6	19866.9	7.1465
2000 Jul 28	10.4931	14.50	6.00	137.52	1442.97	1523.08	145.15	0.0002	8.96E-07	0.000232	18910.6	21068.72	19960.5	7.635
2000 Jul 31	10.4285	14.50	6.00	137.58	1434.79	1524.90	146.22	0.0002	1.76E-06	0.000231	18929.2	21381.43	20118	8.8404
2000 Aug 01	10.3984	14.50	6.00	137.61	1430.88	1525.50	146.71	0.0002	8.19E-07	0.000232	18935.4	21522.48	20187.6	9.0993
2000 Aug 02	10.4626	14.50	6.00	137.63	1439.95	1526.11	145.86	0.0002	-1.75E-06	0.000235	18941.7	21276.06	20075	8.2344
2000 Aug 03	10.4505	14.50	6.00	137.65	1438.53	1526.71	146.09	0.0002	3.29E-07	0.000233	18947.9	21342.3	20109.5	8.4387
2000 Aug 04	10.4434	14.50	6.00	137.67	1437.78	1527.32	146.25	0.0002	1.93E-07	0.000233	18954.1	21388.31	20134.5	8.5734
2000 Aug 07	10.4756	14.50	6.00	137.74	1442.93	1529.14	145.97	0.0002	-8.76E-07	0.000234	18972.8	21307.73	20108.4	8.2298
2000 Aug 08	10.527	14.50	6.00	137.76	1450.25	1529.75	145.32	0.0002	-1.4E-06	0.000234	18979.1	21116.92	20019.5	7.5521
2000 Aug 10	10.4578	14.50	6.00	137.81	1441.16	1530.96	146.40	0.0002	1.89E-06	0.000231	18991.5	21432.15	20175	8.5874
2000 Aug 11	10.392	14.50	6.00	137.83	1432.36	1531.57	147.38	0.0002	1.79E-06	0.000231	18997.8	21720.83	20313.7	9.5474
2000 Aug 14	10.3594	14.50	6.00	137.90	1428.57	1533.40	148.02	0.0002	8.87E-07	0.000232	19016.5	21909.88	20412	10.119
2000 Aug 15	10.4417	14.50	6.00	137.92	1440.15	1534.01	146.91	0.0002	-2.24E-06	0.000235	19022.8	21585	20252.5	8.9884
2000 Aug 16	10.4473	14.50	6.00	137.95	1441.18	1534.62	146.89	0.0002	-1.52E-07	0.000233	19029	21577	20293	8.9453
2000 Aug 17	10.3878	14.50	6.00	137.97	1433.19	1535.23	147.79	0.0002	1.62E-06	0.000231	19035.3	21842.24	20390.5	9.8227
2000 Aug 18	10.3218	14.50	6.00	137.99	1424.32	1535.84	148.80	0.0002	1.8E-06	0.000231	19041.6	22140.04	20532.4	10.804
2000 Aug 21	10.35	14.50	6.00	138.06	1428.91	1537.67	148.57	0.0002	-7.67E-07	0.000234	19060.3	22072.07	20511	10.508
2000 Aug 22	10.347	14.50	6.00	138.08	1428.73	1538.28	148.67	0.0002	8.16E-08	0.000233	19066.6	22102.42	20528.5	10.587
2000 Aug 23	10.3433	14.50	6.00	138.10	1428.46	1538.89	148.78	0.0002	1.01E-07	0.000233	19072.9	22135.82	20547.4	10.677
2000 Aug 24	10.29													

2000 Oct 24	10.9962	14.50	6.00	139.52	1534.18	1577.25	143.44	0.0002	1.84E-06	0.000231	19485.6	20573.76	20012	3.9185
2000 Oct 25	11.0459	14.50	6.00	139.54	1541.37	1577.87	142.85	0.0002	-1.35E-06	0.000234	19472	20405.24	19933.1	3.3049
2000 Oct 26	10.9485	14.50	8.00	139.56	1528.03	1578.50	144.17	0.0002	2.65E-06	0.00023	19478.4	20788.42	20121.8	4.61
2000 Oct 27	10.9467	14.50	6.00	139.59	1528.03	1579.13	144.26	0.0002	4.89E-06	0.000233	19484.8	20809.78	20136.4	4.668
2000 Oct 30	11.1012	14.50	6.00	139.66	1550.36	1581.01	142.42	0.0002	-4.2E-06	0.000237	19504	20282.83	19889.6	2.7611
2000 Oct 31	10.9474	14.50	6.00	139.68	1529.13	1581.64	144.48	0.0002	4.18E-06	0.000229	19510.4	20873.31	20180.4	4.7983
2000 Nov 01	10.9236	14.50	6.00	139.70	1526.06	1582.26	144.85	0.0002	6.46E-07	0.000232	19516.8	20981.03	20235.7	5.1456
2000 Nov 02	10.8615	14.50	6.00	139.73	1517.83	1582.89	145.73	0.0002	1.69E-06	0.000231	19523.3	21238.49	20362.8	6.0087
2000 Nov 03	10.847	14.50	6.00	139.75	1515.85	1583.52	145.99	0.0002	3.94E-07	0.000232	19529.7	21312.24	20401.5	6.2385
2000 Nov 06	10.8921	14.50	6.00	139.82	1522.91	1585.41	145.56	0.0002	-1.22E-06	0.000234	19548.9	21186.52	20351.3	5.7384
2000 Nov 07	10.7883	14.50	6.00	139.84	1508.64	1586.04	147.01	0.0002	2.82E-06	0.00023	19555.4	21613.34	20558.6	7.1743
2000 Nov 08	10.8898	14.50	6.00	139.86	1523.09	1586.67	145.70	0.0002	-2.76E-06	0.000236	19561.8	21229.17	20378.4	5.8389
2000 Nov 09	10.9877	14.50	6.00	139.89	1537.03	1587.30	144.46	0.0002	-2.66E-06	0.000235	19568.2	20869.13	20208.2	4.575
2000 Nov 10	10.9916	14.50	8.00	139.91	1537.83	1587.93	144.47	0.0002	-1.06E-07	0.000233	19574.7	20870.89	20212.4	4.5581
2000 Nov 13	10.9379	14.50	6.00	139.98	1531.07	1589.82	145.35	0.0002	1.46E-06	0.000231	19594	21126.59	20345.9	5.3714
2000 Nov 14	10.9781	14.50	6.00	140.00	1536.95	1590.45	144.88	0.0002	-1.09E-06	0.000234	19600.4	20988.82	20282.7	4.8737
2000 Nov 15	10.951	14.50	6.00	140.02	1533.41	1591.09	145.29	0.0002	7.36E-07	0.000232	19606.9	21109.59	20344.4	5.2689
2000 Nov 16	10.9354	14.50	6.00	140.05	1531.48	1591.72	145.56	0.0002	4.23E-07	0.000232	19613.3	21188.68	20384.8	5.509
2000 Nov 17	10.852	14.50	6.00	140.07	1520.05	1592.35	146.73	0.0002	2.26E-06	0.000231	19619.8	21530.68	20553	6.6628
2000 Nov 20	11.0144	14.50	6.00	140.14	1543.55	1594.25	144.74	0.0002	-4.41E-06	0.000237	19639.1	20950.3	20284.1	4.6026
2000 Nov 21	11.0374	14.50	6.00	140.16	1547.03	1594.88	144.50	0.0002	-6.24E-07	0.000233	19645.6	20875.65	20253.2	4.3353
2000 Nov 22	11.0932	14.50	6.00	140.19	1555.11	1595.52	143.93	0.0002	-1.51E-06	0.000234	19652	20886.56	20162.7	3.6425
2000 Nov 23	10.9137	14.50	6.00	140.21	1530.20	1596.15	146.25	0.0002	4.87E-06	0.000228	19658.5	21389.61	20505.8	6.0431
2000 Nov 24	10.974	14.50	8.00	140.23	1538.90	1596.78	145.51	0.0002	-1.64E-06	0.000234	19665	21172	20404.6	5.2742
2000 Nov 27	10.9071	14.50	6.00	140.30	1530.28	1598.69	146.57	0.0002	1.82E-06	0.000231	19684.4	21483.64	20564.3	6.272
2000 Nov 28	10.9766	14.50	8.00	140.32	1540.28	1599.32	145.70	0.0002	-1.89E-06	0.000235	19690.8	21229.3	20445.6	5.3788
2000 Nov 29	11.0846	14.50	6.00	140.35	1555.69	1599.96	144.34	0.0002	-2.93E-06	0.000236	19697.3	20834.18	20257.8	3.9934
2000 Nov 30	11.0089	14.50	6.00	140.37	1545.32	1600.59	145.39	0.0002	2.05E-06	0.000231	19703.8	21138.47	20408.5	5.0206
2000 Dec 01	10.9742	14.50	6.00	140.39	1540.70	1601.23	145.91	0.0002	9.41E-07	0.000232	19710.3	21289.26	20484.5	5.5152
2000 Dec 04	10.9795	14.50	6.00	140.46	1542.21	1603.14	146.01	0.0002	-1.44E-07	0.000233	19729.7	21319.44	20509.2	5.5493
2000 Dec 06	10.9415	14.50	6.00	140.51	1537.38	1604.41	146.64	0.0002	1.03E-06	0.000232	19742.7	21501.91	20603.5	6.1267
2000 Dec 07	10.9214	14.50	6.00	140.53	1534.80	1605.05	146.96	0.0002	5.45E-07	0.000232	19749.2	21598.28	20653	6.4318
2000 Dec 08	10.979	14.50	6.00	140.55	1543.15	1605.69	146.25	0.0002	-1.56E-06	0.000234	19755.7	21389.23	20586.2	5.8958
2000 Dec 11	11.0863	14.50	6.00	140.62	1559.00	1607.60	145.01	0.0002	-2.91E-06	0.000236	19775.1	21027.23	20391.6	4.3835
2000 Dec 12	11.2014	14.50	6.00	140.65	1575.45	1608.24	143.57	0.0002	-3.12E-06	0.000236	19781.6	20813.68	20193.4	2.9274
2000 Dec 13	11.2231	14.50	6.00	140.67	1578.78	1608.88	143.35	0.0002	-5.89E-07	0.000233	19788.2	20550.37	20165.7	2.8836
2000 Dec 14	11.303	14.50	6.00	140.69	1590.26	1609.52	142.40	0.0002	-2.17E-06	0.000235	19794.7	20276.96	20034.4	1.7037
2000 Dec 15	11.3491	14.50	6.00	140.72	1597.01	1610.15	141.88	0.0002	-1.25E-06	0.000234	19801.2	20128.54	19964.2	1.1585
2000 Dec 18	11.2854	14.50	6.00	140.79	1588.83	1612.07	142.85	0.0002	1.73E-06	0.000231	19820.7	20404.96	20110.7	2.0599
2000 Dec 19	11.3083	14.50	6.00	140.81	1592.31	1612.71	142.61	0.0002	-6.21E-07	0.000233	19827.2	20338.56	20081.3	1.8041
2000 Dec 20	11.3122	14.50	6.00	140.83	1593.12	1613.35	142.62	0.0002	-1.06E-07	0.000233	19833.7	20340.69	20085.6	1.7885
2000 Dec 21	11.1991	14.50	6.00	140.86	1577.45	1614.00	144.12	0.0002	3.07E-06	0.00023	19840.3	20770.09	20299.9	3.2629
2000 Dec 22	11.2013	14.50	6.00	140.88	1578.02	1614.84	144.15	0.0002	-5.97E-06	0.000233	19846.8	20778.44	20307.3	3.2687
2000 Dec 27	11.1886	14.50	6.00	140.99	1578.94	1617.84	144.47	0.0002	7.32E-06	0.000233	19879.4	20871.12	20369.2	3.474
2000 Dec 28	11.3089	14.50	6.00	141.02	1594.75	1618.49	143.12	0.0002	-2.99E-06	0.000236	19886	20482.24	20181.9	2.0986
2000 Dec 29	11.2972	14.50	6.00	141.04	1593.37	1619.13	143.32	0.0002	3.17E-07	0.000233	19892.5	20541	20214.1	2.2806
2001 Jan 02	11.2995	14.50	6.00	141.13	1594.74	1621.70	143.52	0.0002	-6.23E-06	0.000233	19918.7	20597.95	20255.5	2.3863
2001 Jan 03	11.2978	14.50	6.00	141.16	1594.76	1622.35	143.60	0.0002	4.61E-06	0.000233	19925.2	20620.52	20299.9	2.4418
2001 Jan 04	11.3101	14.50	6.00	141.18	1596.76	1622.99	143.50	0.0002	-3.33E-07	0.000233	19931.8	20592.04	20259.2	2.3194
2001 Jan 05	11.2578	14.50	6.00	141.20	1589.64	1623.64	144.22	0.0002	1.42E-06	0.000231	19938.3	20809.33	20364.8	3.0201
2001 Jan 08	11.374	14.50	6.00	141.27	1608.84	1625.57	142.92	0.0002	-3.15E-06	0.000236	19958	20426.1	20190.7	1.6472
2001 Jan 09	11.3692	14.50	6.00	141.30	1608.42	1626.22	143.04	0.0002	1.3E-07	0.000233	19964.6	20459.6	20210.6	1.7411
2001 Jan 10	11.5014	14.50	8.00	141.32	1625.37	1626.86	141.45	0.0002	-3.58E-06	0.000236	19971.1	20007.85	19989.5	0.1299
2001 Jan 11	11.7888	14.50	6.00	141.34	1668.26	1627.51	138.06	0.0002	-7.79E-06	0.000241	19977.7	19059.33	19513.1	-3.287
2001 Jan 12	11.7862	14.50	6.00	141.37	1668.16	1628.16	138.14	0.0002	7.05E-06	0.000233	19984.2	19082.89	19528.4	-3.225
2001 Jan 15	11.5969	14.50	6.00	141.44	1640.21	1630.10	140.58	0.0002	5.13E-06	0.000228	20004	19757.98	19880.8	-0.872
2001 Jan 16	11.6058	14.50	6.00	141.46	1641.74	1630.74	140.51	0.0002	-2.41E-07	0.000233	20010.5	19743.37	19876.5	-0.948
2001 Jan 17	11.4552	14.50	6.00	141.48	1620.70	1631.39	142.41	0.0002	4.08E-06	0.000229	20017.1	20282.01	20149.1	0.933
2001 Jan 18	11.6227	14.50	6.00	141.51	1644.87	1632.04	140.42	0.0002	-4.54E-06	0.000237	20023.7	19717.29	19869.9	-1.087
2001 Jan 19	11.8762	14.50	6.00	141.53	1652.51	1632.69	139.83	0.0002	-1.45E-06	0.000234	20030.3	19552.54	19790	-1.898
2001 Jan 22	11.5808	14.50	6.00	141.60	1639.82	1634.63	141.15	0.0002	2.58E-06	0.00023	20050	19923.41	19986.6	-0.448
2001 Jan 23	11.5357	14.50	6.00	141.62	1633.70	1635.28	141.76	0.0002	1.22E-06	0.000232	20056.6	20095.46	20078	0.137
2001 Jan 24	11.5088	14.50	6.00	141.64	1630.16	1635.93	142.15	0.0002	7.29E-07	0.000232	20063.2	20205.55	20134.3	0.5015
2001 Jan 25	11.4941	14.50	6.00	141.67	1628.35	1636.58	142.38	0.0002	3.98E-07	0.000232	20069.8	20273.37	20171.3	0.7165
2001 Jan 26	11.5503	14.50	6.00	141.69	1636.58	1637.23	141.75	0.0002	-1.52E-06	0.000234	20076.4	20092.52	20084.5	0.0568
2001 Jan 29	11.5128	14.50	6.00	141.78	1632.07	1639.18	142.38	0.0002	1.02E-06	0.000232	20096.2	20271.85	20183.9	0.8181
2001 Jan 30	11.5203	14.50	6.00	141.78	1633.40	1639.84	142.34	0.0002	-2.03E-07	0.000233	20102.8	20261.56	20182	0.5586
2001 Jan 31	11.3974	14.50	6.00	141.81	1616.24	1640.49	143.94	0.0002	3.33E-06	0.00023	20109.5	20717.33	20411.1	2.1274
2001 Feb 01	11.4015	14.50	6.00	141.83	1617.09	1641.14	143.94	0.0002	-1.11E-07	0.000233	20116.1	20718.88	20415.2	2.1094
20														

mean

18.55

6.25

2.1E+07 21370502 2.1E+07

4.5E+14

16.485 max

2.1E+07

-26.05 min

0.99831

0.1743 mean

Figure 2, South African Interest Rates

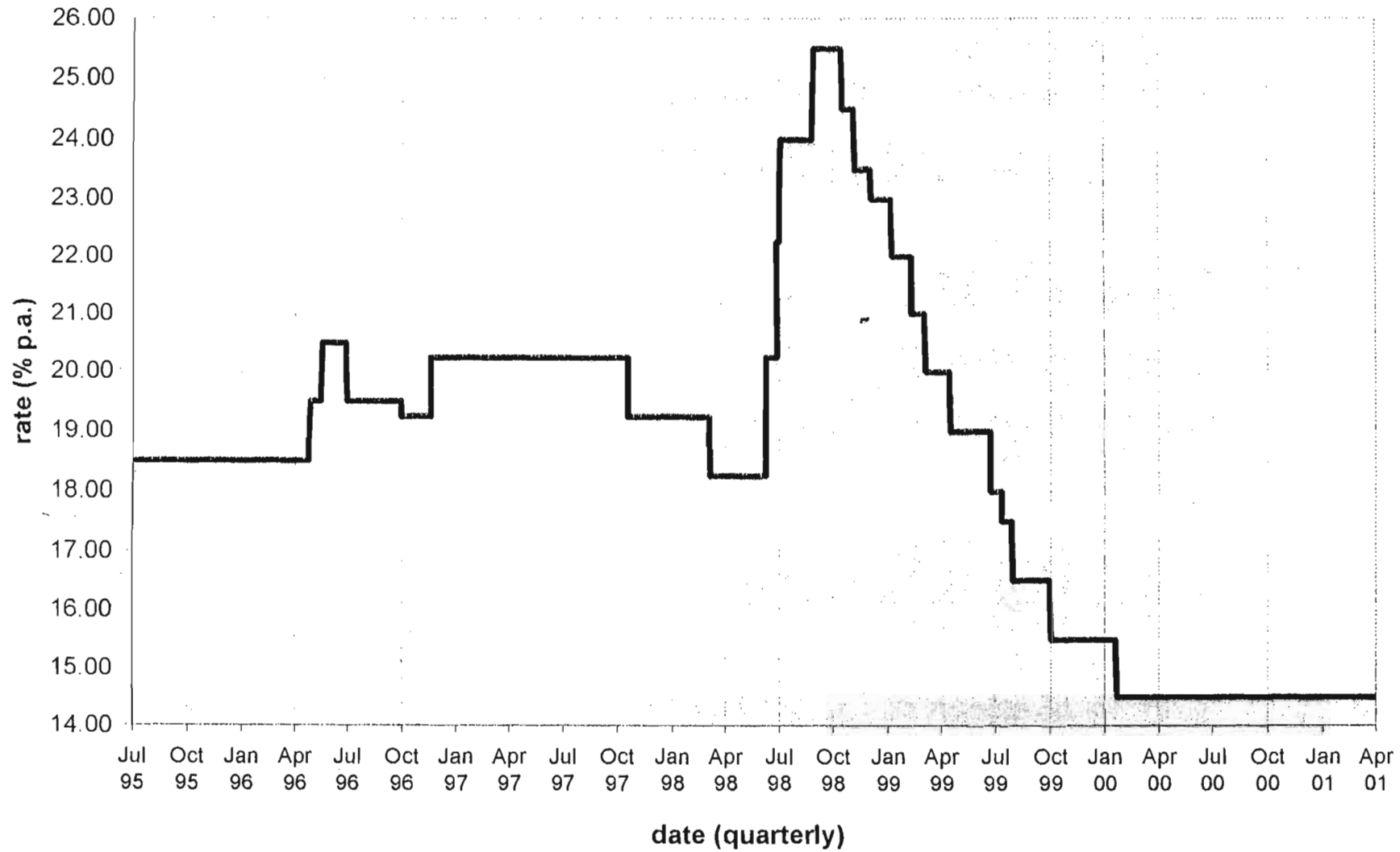


Figure 3, UK Interest Rates

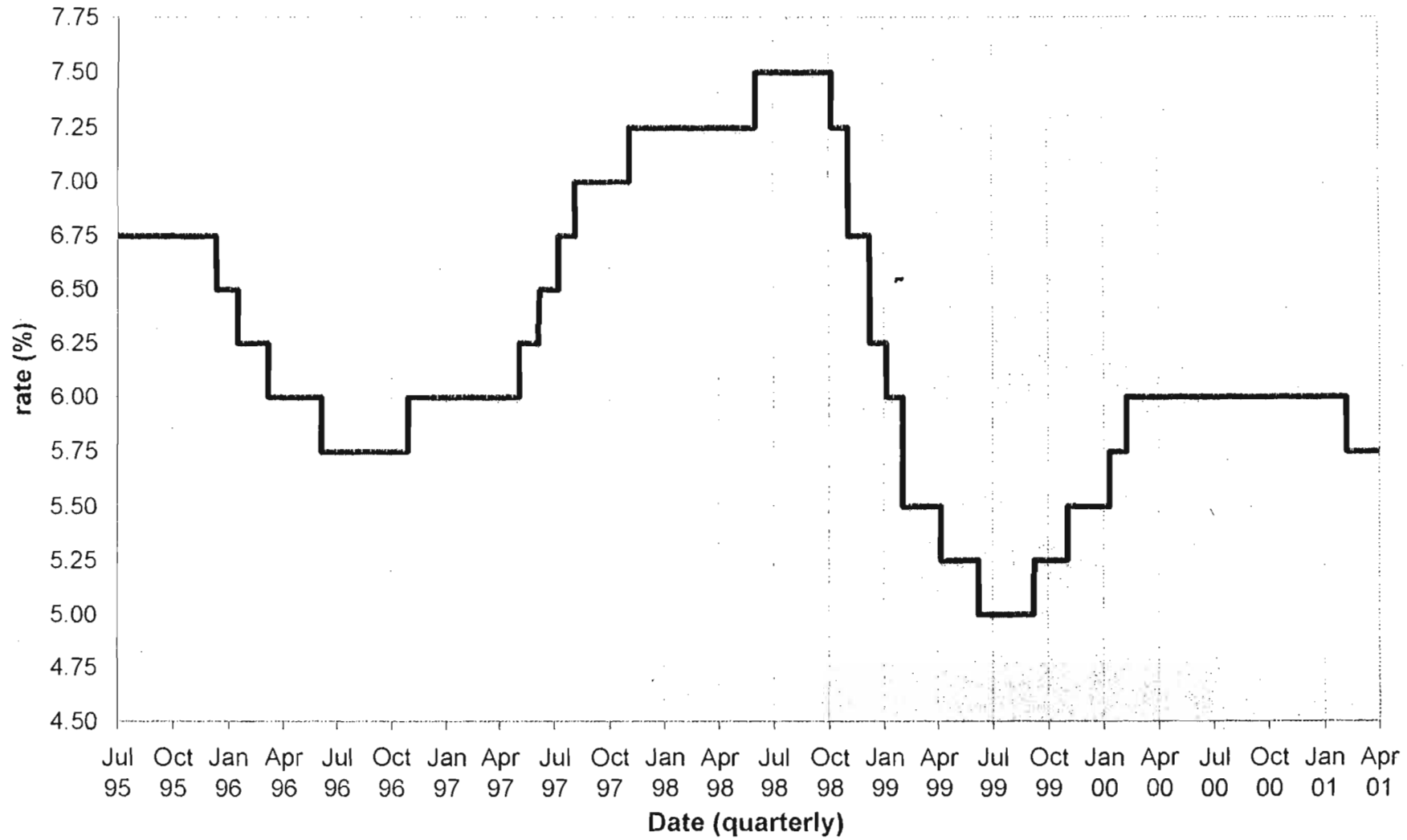


Figure 4, Exchange rates

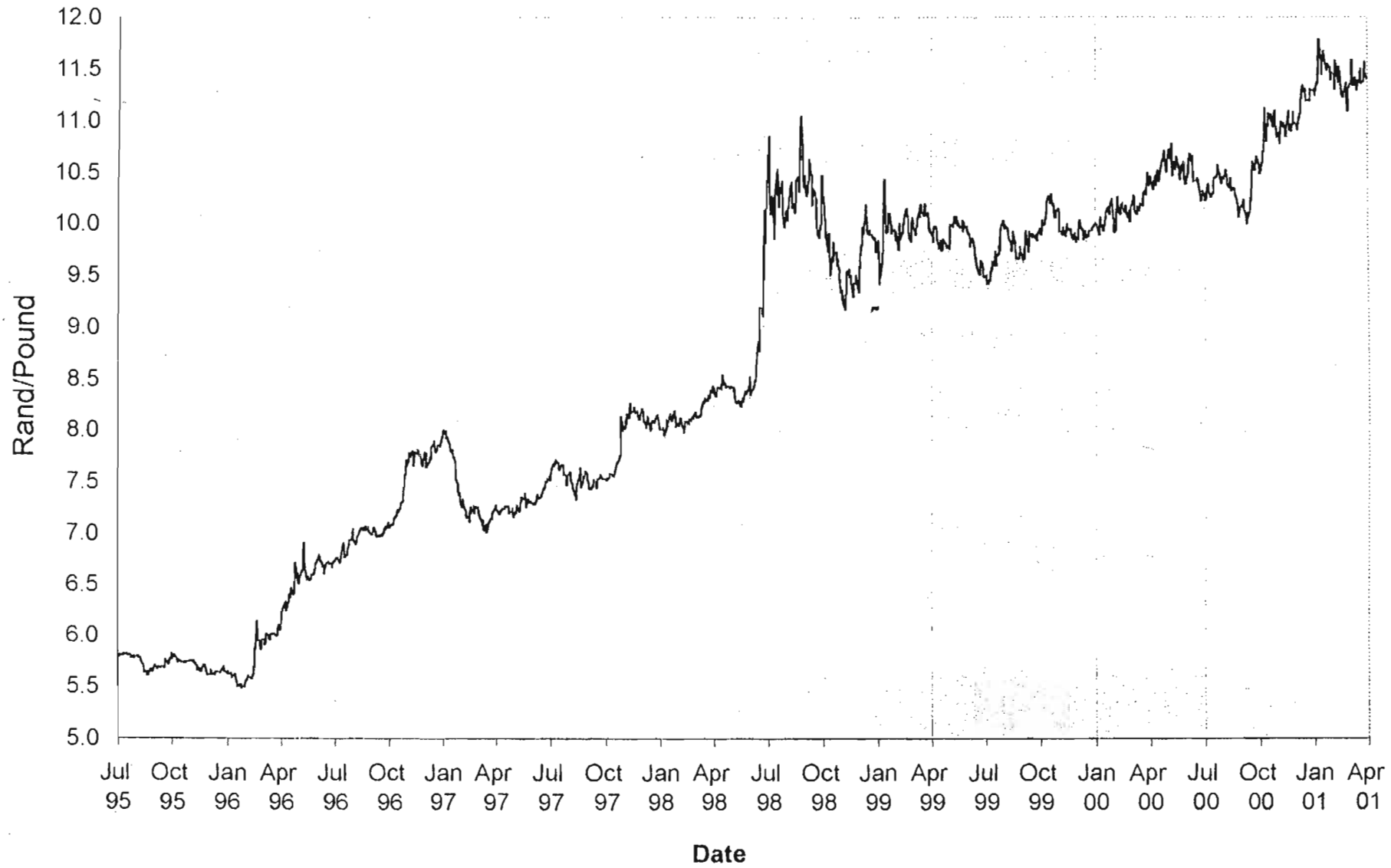


Figure 5, Value of Investment accounts (Pounds)

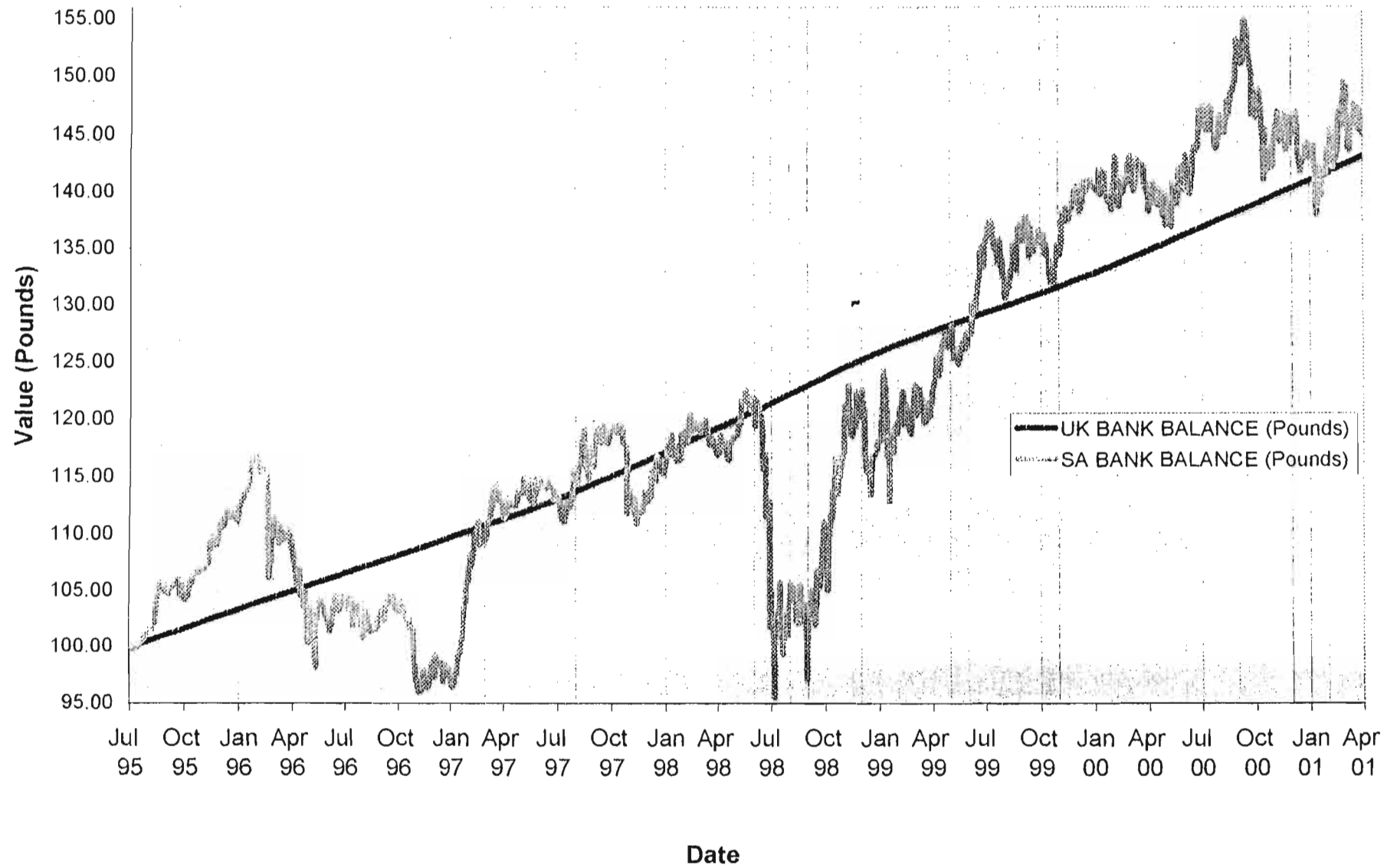


Figure 6, Comparison of SA and UK interest rates

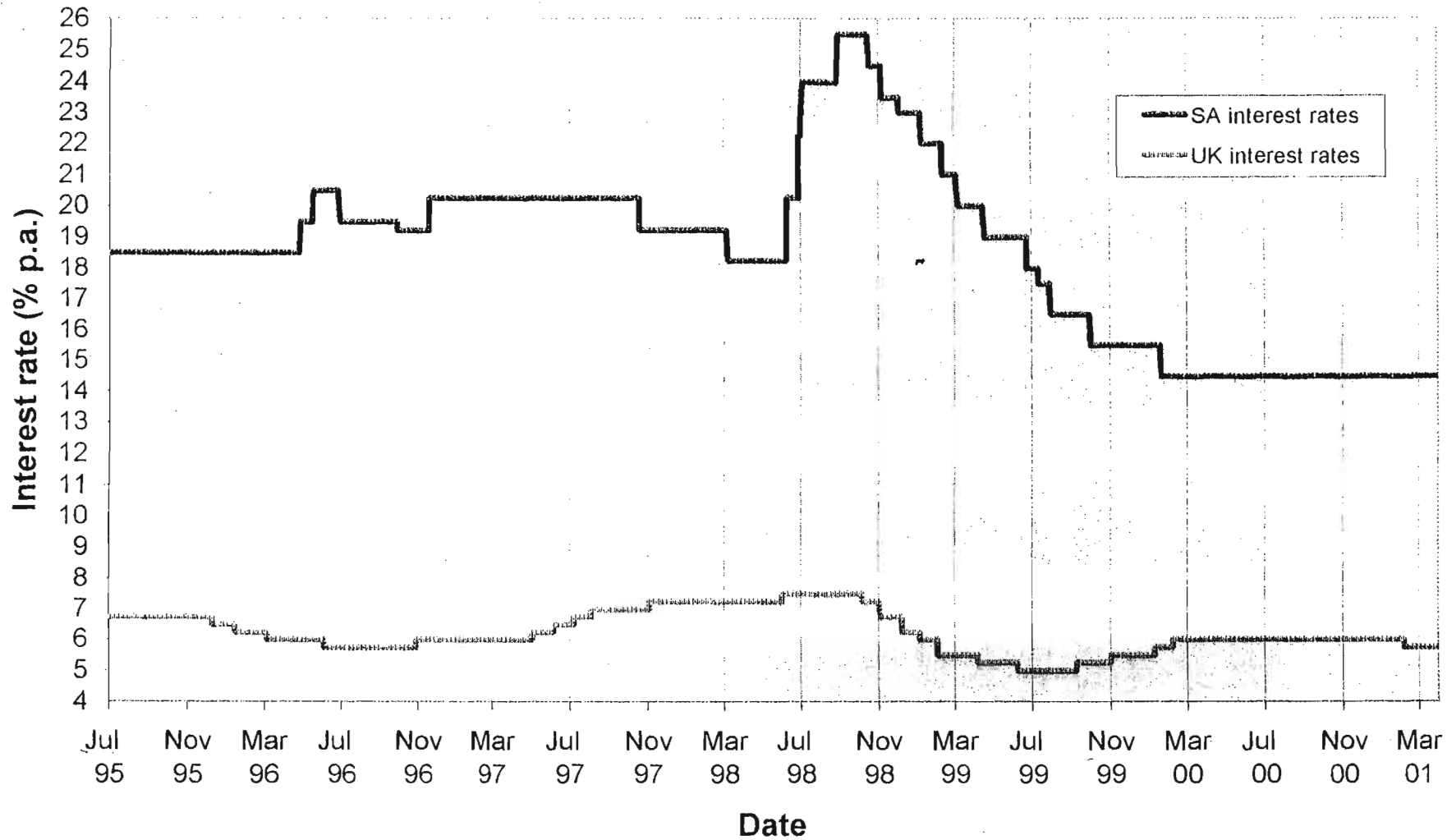


Figure 7, Exchange rates with trendline

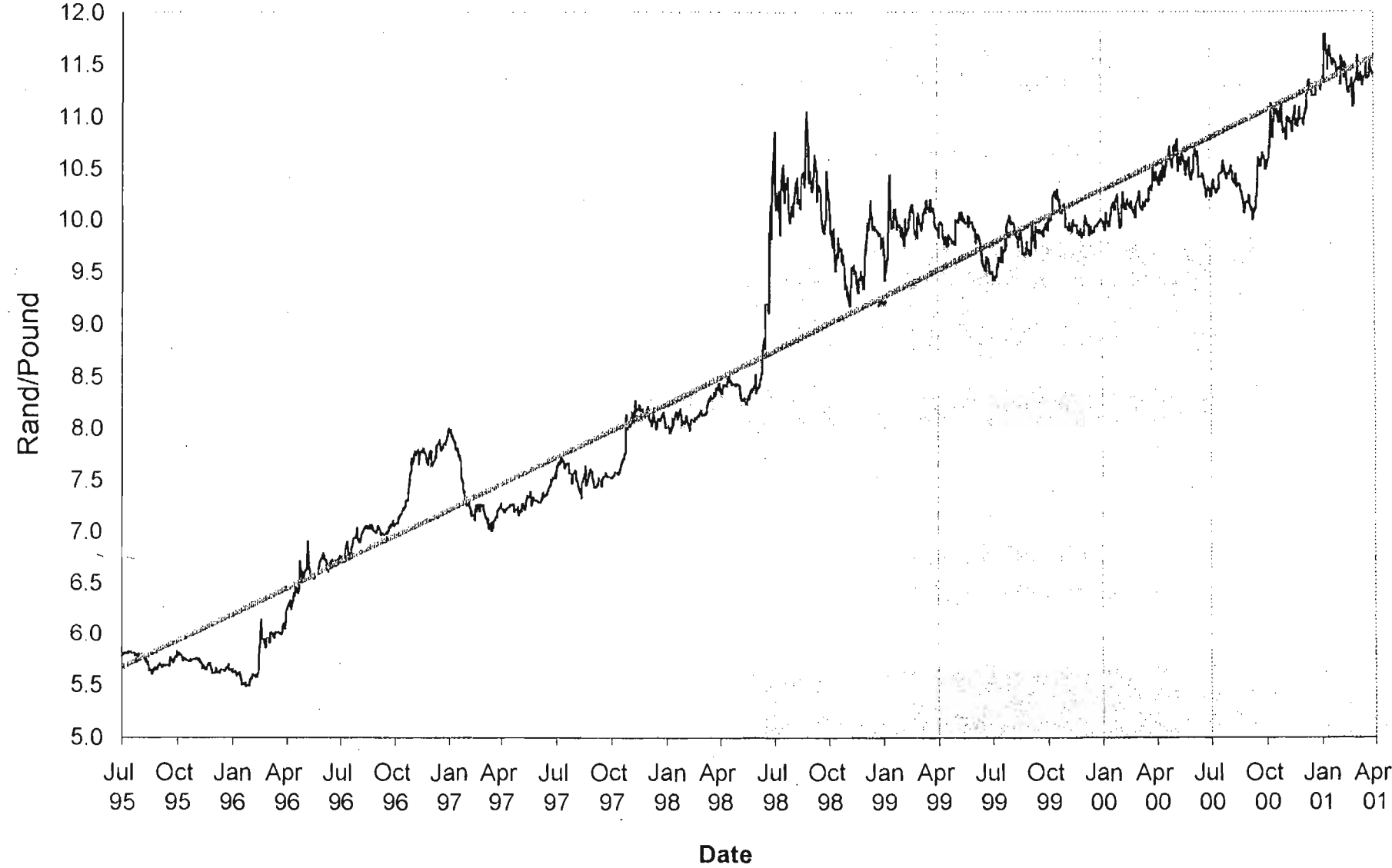


Figure 8, Profit / Loss

